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**DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT**

**24 CFR Part 3280**

**[Docket No. FR-5221-F-02]**

**RIN 2502-AI71**

**Manufactured Home Construction and Safety Standards**

**AGENCY:** Office of the Assistant Secretary for Housing — Federal Housing Commissioner, HUD.

**ACTION:** Final rule.

**SUMMARY:** This final rule amends the Federal Manufactured Home Construction and Safety Standards by adopting certain recommendations made to HUD by the Manufactured Housing Consensus Committee (MHCC), as modified by HUD. The National Manufactured Housing Construction and Safety Standards Act of 1974 (the Act) requires HUD to publish in the Federal Register all proposed revised construction and safety standards (Construction and Safety Standards, or Standards) submitted by the MHCC. The MHCC prepared and submitted to HUD its second group of recommendations to improve various aspects of the Construction and Safety Standards. HUD is including a number of revisions in this final rule to reflect recent changes to code standards adopted by private standard-setting organizations and recommended by the MHCC or members of the public. However, HUD has decided at this time not to go forward in this final rule with certain revisions contained in the proposed rule due to pending regulations for improving energy efficiency in manufactured homes currently being prepared by the Department of Energy (DOE). HUD has also decided not to move forward with its proposal to establish maximum formaldehyde emissions standards for particleboard materials used in Manufactured

Housing flooring applications so that HUD can consider standards for formaldehyde being established by the Environmental Protection Agency (EPA) under the Toxic Substances Control Act.

**DATES:** Effective Date: [Insert date 180 days from the date of publication in the FEDERAL REGISTER]. The incorporation by reference of certain publications listed in the rule is approved by the Director of the Federal Register as of [Insert date 180 days from the date of publication in the FEDERAL REGISTER].

**FOR FURTHER INFORMATION CONTACT:** Henry S. Czauski, Acting Deputy Administrator, Office of Manufactured Housing Programs, Office of Housing, Department of Housing and Urban Development, 451 7th Street, SW, Room 9164, Washington DC 20410; telephone number 202-708-6409 (this is not a toll-free number). Persons with hearing or speech impairments may access this number through TTY by calling the toll-free Federal Information Relay Service at 800-877-8339.

## **SUPPLEMENTARY INFORMATION:**

### **I. Background**

The National Manufactured Housing Construction and Safety Standards Act of 1974 (42 U.S.C. 5401-5426) (the Act) authorizes HUD to establish and amend the Federal Manufactured Home Construction and Safety Standards (the Construction and Safety Standards, or Standards) codified in 24 CFR part 3280. The Act was amended in 2000 by the Manufactured Housing Improvement Act of 2000 (Pub. L. 106-569), by expanding its purposes and creating the Manufactured Housing Consensus Committee (MHCC).

As amended, the purposes of the Act (enumerated at 42 U.S.C. 5401) are: “(1) to protect the quality, durability, safety, and affordability of manufactured homes; (2) to facilitate the

availability of affordable manufactured homes and to increase homeownership for all Americans; (3) to provide for the establishment of practical, uniform, and, to the extent possible, performance-based Federal construction standards for manufactured homes; (4) to encourage innovative and cost-effective construction techniques for manufactured homes; (5) to protect residents of manufactured homes with respect to personal injuries and the amount of insurance costs and property damages in manufactured housing consistent with the other purposes of this section; (6) to establish a balanced consensus process for the development, revision, and interpretation of Federal construction and safety standards for manufactured homes and related regulations for the enforcement of such standards; (7) to ensure uniform and effective enforcement of Federal construction and safety standards for manufactured homes; and (8) to ensure that the public interest in, and need for, affordable manufactured housing is duly considered in all determinations relating to the Federal standards and their enforcement.”

In addition, the amended Act generally requires HUD to establish Construction and Safety Standards that are reasonable and practical, meet high standards of protection, are performance-based, and are objectively stated. Congress specifically established the MHCC to develop proposed revisions to the Construction and Safety Standards. The Act provides specific procedures (42 U.S.C. 5403) for the MHCC process.

The MHCC held its first meeting in August 2002 and began work on reviewing possible revisions to the Construction and Safety Standards. As the MHCC proceeded, proposed revisions to the Construction and Safety Standards were divided into sets. The first set of revisions proposed by the MHCC was published as a final rule in the Federal Register on November 30, 2005 (70 FR 72024). This final rule is based in part on the second set of MHCC

proposals to revise the Construction and Safety Standards published as a proposed rule in the Federal Register on July 13, 2010 (75 FR 39871).

Based upon HUD's review of this rulemaking, HUD has decided not to include in this final rule certain revisions contained in the proposed rule due to overlapping jurisdiction and potential conflicts with pending regulations for improving energy efficiency in manufactured homes being prepared by DOE under the Energy Independence and Security Act (Pub. L. 110-140, approved December 19, 2007) (EISA). DOE published an Advance Notice of Proposed Rulemaking soliciting information on the design, construction, financing, operating costs, and other areas for relevance to establishing and implementing energy standards for manufactured housing in 2010 (75 FR 7556, February 22, 2010). Given the DOE rulemaking, HUD has decided at this time not to adopt the proposed modifications to §§ 3280.503, 3280.505, 3280.506, 3280.508, 3280.509<sup>1</sup>, 3280.510, 3280.511, 3280.703, 3280.715(a)(4), and 3280.715(a)(6).

HUD has also decided not to include in this final rule proposals to create a separate formaldehyde emissions limit for particleboard flooring materials of 0.2 ppm and adding medium density fiberboard materials (MDF) as a formaldehyde-regulated material with an emissions limit of 0.3 ppm. HUD is taking this action in view of its statutory requirement to develop reduced formaldehyde emission standards for composite wood products used in manufactured homes that reflect the national standards for formaldehyde emissions from those products that is currently being developed by the EPA under the Toxic Substances Control Act as amended by Section 2, Title VI—Formaldehyde Standards For Composite Wood Products.

Finally, in consideration of the public comments and HUD's experience implementing the program, HUD has also made certain editorial revisions to other sections in the proposed rule. In general, the revisions adopt changes to the codified regulations that reflect code

revisions adopted by private standard-setting organizations. HUD declined to adopt some standards in selected instances based on such considerations as cost and public safety. In addition, HUD has decided at this time not to adopt the some code revisions because they have been implemented for only a short period of time and their effect is uncertain.

## **II. Analysis of Public Comments**

### The Commenters

The public comment period on the proposed rule closed on September 10, 2010, and five public comments were received. Comments were submitted by a code-making organization, a manufactured housing trade association, two material trade associations, and a member of the public, and covered a wide range of subjects. This section presents the significant issues, questions, and suggestions submitted by public commenters, and HUD's response to these issues, questions, and suggestions.

The commenters were generally supportive of the proposed rule but offered specific recommendations to particular sections of the construction and safety standards. For instance, they supported the proposal's recognition of model codes and other standards and the potential benefit of uniform and effective enforcement of Federal construction and safety standards for manufactured homes. One commenter, for example, stated that the regulation's safety driven requirements will prevent, mitigate, or reduce the number of injuries to people living in HUD-constructed homes and promote honesty among contractors who are inclined to take short cuts that frequently create safety hazards and/or substandard conditions for the people who reside in the homes. Nevertheless, the commenters raised a number of technical cost and safety issues that are discussed in the following section. The following is a summary of the comments received on the proposed rule:

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<sup>1</sup> HUD is substituting a table for this section.

Comment: Requirements for code references for similar building materials should be consistent with the International Residential Code. One commenter noted that it would be preferable for requirements for manufactured housing that are consistent with code references and with requirements for similar materials and building elements regulated by the International Residential Code (IRC), for consistency of enforcement by various compliance authorities. It was noted that standards contained in the proposed rule for areas such as glazing and water conservation were consistent with the IRC. However, the commenter noted there were inconsistencies between the proposed rule and the IRC, including, for example, alternate test methods in the IRC for determining flame spread ratings of thermal insulating materials.

Response: This recommendation was not accepted by HUD. HUD did not include certain IRC standards since those reference standards were not included in the proposed rule and no technical comparisons or cost data was provided between IRC references and HUD reference standards in support of the recommendation.

Comment: Exit Facilities: Exterior Doors Width. A commenter suggested that IRC Section R311, Means of Egress, requires doors to provide a minimum clear width of 32 inches and a minimum height of 78 inches, which are 4 inches larger for both dimensions than HUD's requirements under § 3280.105. The commenter suggested that the difference may be explained by the interest of minimizing costs. (See § 3280.105.)

Response: HUD did not accept this recommendation, as the issue of exterior passage door width for egress is currently being reviewed by the MHCC. In addition, there are two exterior doors required in manufactured homes for egress by the HUD Standards while only one exterior passage door is required for egress by the IRC.

Comment: Toilet Compartment Width. A commenter noted that while the proposed rule is generally consistent with IRC Section R308, Toilet, Bath and Shower Spaces, the proposed rule permits a minimum dimension of 12 inches from a tub edge, while the IRC requires a minimum of 15 inches from the tub edge. The commenter suggests that cost may be a factor. (See § 3280.111.)

Response: HUD did not accept this proposal to increase the minimum dimension of 12 inches to 15 inches from the toilet to a bathtub edge due to room geometry constraints and the generally smaller room sizes in manufactured homes. In addition, it would be burdensome and costly for the industry to redesign toilet compartment spaces for a practice that has been ergonomically acceptable since the inception of the HUD Standards.

Comment: Adopt the Performance Requirement for Individual Thermostatic Pressure Balancing and Combination Control for Bathing Facilities. A commenter recommended that HUD update the ASSE 1016 standard, Automatic Compensating Values for Individual Shower and Tub/Shower Combinations, from the 1996 edition to the 2005 edition. (See § 3280.607 Plumbing Fixtures.)

Response: HUD accepted this comment, and the ASSE 1016 standard, 2005 edition, has been included in the final rule. (See § 3280.607 Plumbing Fixtures.)

Comment: Require sprinkler systems in manufactured housing. A commenter recommended that HUD may want to consider whether sprinkler systems should be required in manufactured housing. The commenter stated that retrofitting manufactured housing units with this type of system might be expensive, but despite the incremental cost impact, using sprinklers to extinguish fires rapidly has proven to save lives and dramatically reduce property damages.

Response: HUD declined to adopt the commenter's recommendation, as adoption of standards in this area would be premature. This issue is currently being considered by the MHCC. Recent fire data analysis prepared by the National Fire Protection Association (NFPA) indicated that HUD Standard units have a similar fire safety record to that of one- and two-family dwelling units. In addition, a comparison of code requirements between manufactured homes and one- and two-family homes shows many fire safety provisions for manufactured homes that are not included in model building codes for one- and two-family homes. Further, there is considerable cost impact to install a sprinkler system in a manufactured home for what would appear to be marginal benefits.

Comment: Include anti-scald valves in the standards. Another commenter expressed support for the proposal to include anti-scald valves in the standards to prevent accidental burn injuries to children and others. (See § 3280.607 Plumbing Fixtures.)

Response: HUD adopted the commenter's recommendation and included it in the final rule. (See § 3280.607 Plumbing Fixtures.)

Comment: Revise the Reference Standards for Polyethylene (PEX) tubing and hot and cold water distribution systems. A commenter suggested updates for the new reference standards for polyethylene tubing and hot and cold water distribution systems.

Response: HUD accepted the commenter's recommendations and incorporated these standards in the final rule (See § 3280.604(b)(2)). However, suggestions to add a number of other plumbing reference standards were not accepted, since they were not included in the proposed rule. There was also no information provided as to the potential impact of including costs and benefits associated with those proposed revisions to the current plumbing requirements.



Comment: Update Glazing and Reference Standards. A commenter recommended further updates to glazing and skylight reference standards contained in the proposed rule. The commenter stated that AAMA/WDMA 100/I.S 7\_00. Voluntary Specifications for Skylights is no longer maintained as an industry standard, and had been replaced by the applicable provisions of AAMA/WDMA/CSA 101/1.S.2/A440-08: North American Fenestration Standard Specification for Windows, Doors, and Skylights, which is the appropriate reference standard for the 3280 requirements. (See §§ 3280.403(b)(2), 3280.403(e)(3).)

Response: HUD accepted the commenters' recommendations to upgrade the standards beyond those in the proposed rule as the prior voluntary standard for skylights is no longer available and has been replaced in §§ 3280.403(b)(2) and (e)(3) of the HUD Standards by the AAMA/WDMA/CSA 101/1.S.2/A440-08, North American Fenestration Standard for Windows, Doors, and Skylights.

Comment: Safety Glazing: One commenter noted that glass and glazed openings requirements under the proposed rule are generally consistent with IRC section R308, Glazing. Another commenter suggested updating the requirements for safety glazing to the 2004 standard.

Response: HUD agreed with the commenters and has updated the ANSI Z97.1 reference Standard for Safety Glazing Materials used in Buildings – Safety Performance Specifications and Methods of Test in the final rule to the 2004 edition (See § 3280.113(c).)

Comment: Allow a microwave to serve as the cabinet protection for fire safety. A commenter supported the proposed revision to allow a microwave to serve as the cabinet protection for fire safety without the current requirement for a metal hood. The commenter stated that such proposed requirement would provide an alternative means of complying with current kitchen cabinet protection requirements and reduce materials and labor costs while providing the

necessary fire protection. The commenter recommended that the provision be clarified to specify an “Over-the-range” microwave oven. (See § 3280.204, Kitchen cabinet protection.)

Response: HUD generally agrees with the commenter. HUD, therefore, allows use of a microwave oven as an alternative compliance method to protect combustible kitchen cabinets in those situations where the oven is certified to comply with the requirements of Microwave Cooking Appliances in UL 923-2002, is installed between the cabinet and range, and is equivalent in fire protection to the metal range hood otherwise required by this section.

Comment: Requirements for thermal insulating materials. A commenter noted that the requirements for thermal insulating materials in the proposed rule are generally consistent with IRC standard 225-96. The commenter noted that the test method referenced in § 3280.207 is a standard of the NFPA while the two test methods permitted for determining the flames spread index in IRC are 302.10 and ASTM International E 84 or UL 723.

The commenter suggested that HUD consider allowing these two alternate/additional test methods for determining the flames spread index, to permit additional flexibility to manufacturers. The commenter noted that the referenced (NFPA) standard was issued in 1996 and that the ASTM E 84 standard is available in an up-to-date 2010 version. The UL standard was also issued more recently than 1996. The addition of the two alternate test methods would have no incremental cost effect, and may reduce testing costs for manufacturers. (See § 3280.207.)

Response: HUD did not include the additional reference standards for flame spread testing in the final rule that were suggested by the commenter, as there was no technical information provided as to the comparability of the results that would be achieved by use of the alternate testing standards recommended.

Comment: The standards should provide for the sizing of heating equipment to reflect the anticipated location. The commenter explained that the current requirements result, in some instances, in the sizing of equipment indicating the most extreme temperatures rather than the actual heating design temperature. The commenter submitted that the wide variance in temperature creates over-compensation in the design and provision of heating equipment and results in energy inefficiency, as well as in operating economy losses and declines in consumer comfort. (See § 3280.510.)

Response: HUD is not including in this final rule this proposed modification to § 3280.510 in view of the DOE rulemaking for improving energy efficiency in manufactured homes noted earlier in this preamble.

Comment: HUD should count the window sash toward the opening size requirement for egress. A commenter noted the cost impacts associated with the proposed change to prohibit removal of the window sash for determining the opening size for egress windows, and suggested maintaining the current standard. (See § 3280.404(c)(2).)

Response: HUD declined to adopt the commenter's recommendation to maintain the current standard, which allows the sash to be removed to meet the egress window size. HUD reconsidered the original standard in the proposed rule to permit the sash to be removed to meet the egress window size. HUD believes that safety considerations outweigh the cost impact. Accordingly, HUD adopted a change in the final rule to set the standard window size at a level that includes the sash. The sash cannot be removed to meet the egress window size requirements.

Comment: Adopt the Alternative Language in the proposed rule for Comfort Cooling Certificate and Information. The proposed rule provides language that must be included in the

comfort cooling certificate for homes in which a central air-conditioning system is provided by the home manufacturer. It also provides an alternative example certificate that contains language explaining the importance of orientation and exposure to the sun. (See § 3280.511.)

Response: HUD is not including in this final rule this proposed modification to § 3280.511, in view of the DOE rulemaking for improving energy efficiency in manufactured homes as noted earlier in this preamble.

Comment: Materials Update. A commenter stated that the standards for Crosslinked Polyethylene (PEX) tubing in the proposed rule are out of date and considered it important that HUD use the updated standards. The updated standards identified by the commenter were Standard Specification for Crosslinked Polyethylene (PEX) Tubing - ASTM F876 2010, and Standard Specification for Crosslinked Polyethylene (PEX) Hot and Cold Water Distribution Systems ASTM F877 2007.

Response: HUD accepted this comment and updated the ASTM F876 and ASTM F877 standards. (See § 3280.604(b)(2).)

Comment: Plumbing Fixture Standard Update. A commenter suggested that the references to ASSE-1016 1996 may be out of date, and unusable by manufacturers. The commenter suggested an updated reference. (See § 3280.607.)

Response: HUD accepted this comment, and the ASSE 1016 standard, 2005 edition, has been included in the final rule. (See § 3280.607 Plumbing Fixtures.)

Comment: Eliminate the requirement to attach operating instructions to each appliance. A commenter also suggested that it is unnecessary to continue to require appliance operating instructions to be attached to each appliance if they are also required to be provided in the homeowners' manual. (See § 3280.711 Instructions.)

Response: HUD declines to adopt the recommendation. HUD has found that the instructions attached to the appliance are often discarded after the appliance is initially operated by consumers. Additionally, HUD notes that the requirement to have the instructions also provided in the manual is needed for future appliance maintenance.

Comment: Circulating Systems. A commenter noted that the proposed rule requires Class 1 air ducts fiberglass to be no closer than 3 feet from the furnace bonnet or plenum and requires furnace supply plenums to be constructed of Class 0 air duct (metal), extending at least 3 feet from a heat exchanger along the centerline of the airflow. The commenter stated that this proposed revision is contrary to a number of the instructions provided by furnace manufacturers and is not required by the IRC for single-family site-built housing. (See § 3280.715.)

Response: HUD did not accept this comment, as no technical data was provided by the commenter in support of eliminating this fire safety requirement.

Comment: Modify requirements for placement of electrical distribution panels. A commenter suggested that HUD continue to allow the electrical distribution panel to be located in a clothes closet and be “grandfathered in” for existing designs. (See § 3280.804.)

Response: HUD declined to adopt the commenter’s suggestion to grandfather in existing designs, because doing so would conflict with fire safety considerations and requirements in the National Electrical Code. (See § 3280.804(f).) These considerations outweigh any design requirements associated with relocating the electrical panel outside of the closet area.

Comment: Coordination with Appendix E. A commenter discussed IRC Appendix E, which describes the means and scope of inspections of manufactured housing installed on privately owned lots within a jurisdiction that adopts the Appendix. A commenter stated that

because appendices are not mandatory unless adopted by the authority having jurisdiction, there may be issues that HUD may wish to coordinate with the requirements of Appendix E.

Response: HUD declined to adopt the commenter's recommendations because Appendix E deals with siting, which is not a construction standard, and is addressed under another proposed rule.

### **III. This Final Rule**

The final rule will revise certain sections of the Construction and Safety Standards and will also revise the incorporated reference standards, where indicated. Most of the changes will codify existing building practices or conform HUD standards to previously issued HUD interpretive bulletins or existing building codes.

#### **A. Incorporation by Reference**

The final rule revises § 3280.4, by allowing the manufacturer to select which reference standard to incorporate into its designs and construction, where two or more reference standards are incorporated by reference for the same application or requirement. The final rule will not require that manufacturers comply with the most restrictive aspects of two or more standards in their designs and construction if more than one reference standard exists. While this change reflects a relaxation of current requirements by providing manufacturers with more flexibility in selecting materials, components, etc., to utilize in their production of homes, it is not a significant change. This is because the areas in which there are duplicate reference standards are very few and, for those that do exist, HUD believes the degree of differences in performance and safety between the reference standards (i.e., the restrictive and less restrictive) are not significant. HUD is also using this final rule to revise § 3280.4, its centralized incorporation by reference section, to conform to updated Federal Register drafting guidance.

## B. Planning Considerations

The final rule revises § 3280.105(a)(2), by establishing the method to be used when measuring the travel distance from the bedroom door to an exit door, a distance that must not exceed 35 feet. The final rule clarifies and standardizes the current method used by manufacturers to measure the travel distance as the distance from the center of the bedroom door to the center of the exit door.

The final rule also revises the provisions for exit facilities/exit doors in § 3280.105(b), to permit door seals to reduce the minimum required exterior door opening by one inch. This change will not change current construction requirements for exterior passage doors. Rather, it codifies an existing practice that has been previously permitted under Interpretative Bulletin B-1-76.

The final rule also revises and makes editorial revisions to provisions for toilet requirements in § 3280.111, by adding an additional minimum clearance dimension from the centerline of a toilet to any adjacent wall of at least 15 inches. This standard is consistent with both current design practice in manufactured homes and with similar requirements in residential building codes.

The final rule revises § 3280.113, by adding additional requirements regarding where safety glazing materials are to be located and how they are to be tested to determine whether they can be considered safety glazing materials. The rule also makes the existing requirements for location and testing of safety glazing materials consistent with other model building codes and residential construction practices. As a result, the final rule provides that safety glazing materials are any glazing material capable of meeting the requirements of the Consumer Product Safety

Commission (CPSC) or the Standard for Safety Glazing Materials used in Buildings – Safety Performance Specifications and Methods of Test used in ANSI Z97.1-2004.

#### C. Fire Safety

The final rule adds an alternative means of complying with the kitchen cabinet protection requirements in § 3280.204, by allowing the metal hood, 5/16-inch gypsum board, and 3/8-inch air space required by this section, to be omitted when a microwave oven certified as conforming to Underwriters Laboratories Standard UL 923-2002 is installed between the cabinet and the range. However, since the microwave oven would protect only combustible kitchen cabinet materials over the cooking range, all exposed surfaces along the bottom and sides of the cabinet also need to be protected by at least 5/16-inch gypsum board or the equivalent, in accordance with paragraph (a) of this section.

The final rule adds fire safety and performance requirements for all types of thermal insulating materials under new section § 3280.207, Requirements for Thermal Insulating Materials. The current standards require evaluation of fire performance characteristics only of foam plastic insulating materials. Because thermal insulation materials used in manufactured homes are the same type of insulation materials and characteristics used in residential building codes, they are expected to also comply with the fire-resistive properties in this final rule.

#### D. Body and Frame Requirements

The final rule revises § 3280.305(c)(1)(i) by clarifying that the net uplift roof load must not be reduced by the dead load of the roof structure for the purposes of preparing engineering calculations or in performing structural load testing. This change for roof uplift design makes no change to current engineering design practices. Rather, it codifies the current practices permitted under Interpretative Bulletin D-4-76.



The final rule makes editorial revisions and also clarifies existing provisions in § 3280.305(c) that address areas where state or local building codes requirements exceed the provisions for design roof loads and wind loads required by HUD Standards. For consideration of state or local requirements for wind loads, the final rule clarifies that wind mapping data or records will need to indicate that higher design loads are necessary.

As noted earlier in this preamble, HUD has decided not to include in this final rule its proposed modifications to lower the existing requirements for control of formaldehyde emissions for particleboard materials, or to add new requirements to limit formaldehyde emissions from medium-density fiberboard materials in § 3280.308. HUD intends to review the standards for formaldehyde currently being established by EPA under the Toxic Substances Control Act.

#### E. Testing

The final rule contains a conforming amendment to § 3280.403, for the testing of skylights that is consistent with the revisions to § 3280.305(c)(3)(iv) of the Construction and Safety Standards published in the Federal Register on November 30, 2005. The conforming amendment provides for skylights to be certified as complying with the AAMA/WDMA/CSA 101/1.S.2/A440-08, North American Fenestration Voluntary Standard Specification for Windows, Doors, and Skylights.

Section 3280.404(c)(2) of the final rule will now prohibit any window that requires the removal of a sash to meet the egress size provisions of the Manufactured Home Construction and Safety Standards from being classified as an egress window. This change will enhance egress and occupant safety in the event of an emergency.

#### F. Subpart F

The final rule revises § 3280.504(c) by allowing the use of liquid-applied vapor retarders, so long as a nationally recognized testing agency has approved its use on the specific substrate to which it is to be applied. This addition codifies the current practice of accepting liquid-applied vapor retarders as an alternative to other conventional vapor retarder materials required by this section.

Section 3280.509(c) is revised by replacing the graph for determining the effective R values of compressed insulation with a table that allows for more precisely determining the effects on R values of nonuniform and uniform insulation compression for batt and blown insulation. This will provide a more accurate method for determining effective R value requirements when insulation is compressed or used in sloping roof cavities and will result in more accurate projections of heat loss and heat gain for manufactured homes than determined by the current graphical method.

As noted earlier in this preamble, HUD has decided not to forward with its proposed modifications to §§ 3280.503, 3280.505, 3280.506, 3280.509, 3280.510, and 3280.511, because of standards for energy efficiency being developed by DOE under the Energy Independence and Security Act.

#### G. Plumbing Systems

The final rule makes a conforming amendment to § 3280.603(a)(2) on water conservation to limit each water closet to 1.6 gallons of water per flush. Section 3280.607(b)(2)(iii) was previously amended in the final rule published in the Federal Register on November 30, 2005, by requiring all water closets to be low-consumption (1.6 gallons per flush) closets. This conforming amendment will conserve water and help assure the continued availability of adequate water supplies, as well as reduce wastewater flows.

The final rule revises § 3280.603(b)(4), by adding a requirement that the installation instructions required by § 3280.306(b)(4) include a statement that any heat tape or pipe heating cable used be listed for use in manufactured homes. The final rule also revises this section with regard to the requirements for the receptacle outlet for connection of the heat tape or pipe heating cable to conform with the amended provisions to § 3280.806(d).

The final rule revises the table in 3280.604(b)(2), by incorporating standards for the installation of cross-linked polyethylene (PEX) plastic cold and hot water systems. This will permit the use of PEX plastic piping as an alternate piping material to other materials that may currently be used to supply hot and cold water systems.

The final rule revises § 3280.606(a)(2), by allowing a two or three compartment sink, up to three individual sinks or up to three lavatories and be connected to one “P” trap, to be considered as a single fixture for the purposes of drainage and ventilation under certain circumstances. This will allow more fixtures to be connected to one “P” trap than is currently permitted by the Standards and would be consistent with other residential model plumbing codes for similar three-fixture configurations.

The final rule adds a new requirement in § 3280.607(b)(3)(v) for shower, bath, and tub-shower combination valves to be either balanced pressure, thermostatic, or a combination of mixing valves that conforms to the requirements of ASSE 1016-2005, Performance Requirements for Automatic Compensating Valves for Individual Shower and Tub/Shower Combinations. These valves will be required to have handle position stops that are adjustable to a maximum setting of 120 °F to prevent scalding and burn injuries to occupants from very hot water. This change will reduce the number of injuries and deaths resulting from tap water scald burns. Further, the Centers for Disease Control and Prevention (CDC) and other organizations

report that a majority of scald burn victims are young children whose injuries may have been prevented by the use of an anti-scald valve<sup>2</sup>. In addition, this revision is consistent with IRC requirements for single- and two-family dwellings.

The final rule revises § 3280.607(b)(5)(ii) for the standpipe height required for laundry tubs from 30 inches to 42 inches above its trap and will require the standpipe to terminate in an accessible location no lower than the top of the clothes washing machine. This increase in standpipe height is also consistent with the IRC requirements for single- and two-family dwellings and will help prevent backflow and improve operation of clothes washers installed in manufactured homes.

The final rule revises § 3280.610(e), by permitting fixture drains that serve only a single lavatory fixture to be 1-1/4 inches in diameter. This reduction in drain size for a single lavatory is not significant and would provide adequate drainage flow and venting for individual lavatory fixtures.

The final rule revises the requirements for anti-siphon trap vent devices in § 3280.611(d), by redefining these devices as mechanical vents (see § 3280.602) and by expanding the requirements to also include gravity-operated mechanical vents (also known as air admittance valves). This will allow manufacturers to use either type of mechanical vent (anti-siphon vent or air admittance valve) for venting of certain plumbing fixtures. In addition, § 3280.611(f) is expanded to permit vent terminals either through wall extensions or into mechanical vent devices.

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<sup>2</sup> Centers for Disease Control and Prevention and U.S. Department of Housing and Urban Development. Healthy Housing Reference Manual, Atlanta: U.S. Department of Health and Human Services, 2006.

## H. Heating, Cooling, and Fuel Burning Systems

The final rule revises § 3280.705(b) by permitting corrugated stainless steel tubing (CSST) systems to be used in gas piping systems, provided that these systems are installed in accordance with the requirements of ANSI/IAS LC-1-1997, Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing. In addition, a table for sizing CSST systems is being added in § 3280.705(d). Paragraph (h) of this section is also revised by permitting CSST to be run inside walls, floors, partitions, and roofs under specified conditions. CSST piping is currently permitted to be used in all other residential construction as a gas piping system by the model codes and state and local building codes.

Sections 3280.707(a) and (d) and 3280.714(a) revise the energy efficiency and energy conservation requirements for comfort heating systems, water heaters, and cooling appliances so that they comply with the provisions of 10 CFR part 430, Energy Conservation Program for Consumer Products, the current applicable requirements for these appliances. Since the energy efficiency requirements cited in the proposed rule were determined to be no longer applicable to these appliances, they have been replaced by the above-cited requirements in the final rule. In addition, HUD has determined that these energy-efficiency requirements for appliances are not affected by the energy-efficiency standards being developed by DOE under the Energy Independence and Security Act.

Section 3280.715 is revised by eliminating the use of Class 2 ducts and by deleting their definition from § 3280.703, by requiring manufacturer's instructions to indicate that crossover ducts are not to be in contact with the ground and must be properly supported, and by requiring air supply crossover ducts in all Thermal Zones to have a minimal thermal resistance of R-8, unless installed in a basement. This change, eliminating the use of Class 2 air handling ducts, is

consistent with the requirements of the IRC for one- and two-family dwellings, and would improve the fire safety and performance of air handling ducts by requiring the use of Class 0 or 1 ducts, which are more fire resistive than Class 2 ducts. The revision to increase the thermal resistance for crossover ducts will reduce heat loss and improve the energy efficiency of crossover ducts between sections of multisection manufactured homes.

As noted in this preamble, HUD has decided not to forward with its proposed modifications to §§ 3280.715(a)(4) and (a)(6).

#### I. Electrical Systems

The final rule revises § 3280.803 by requiring that a 1-1/4 inch maximum continuous raceway is to be used when installing a power supply cord within the wall from the bottom of the distribution panel to the underside of the floor. This change and clarification is consistent with the current requirements of the National Electrical Code (NEC), NFPA 70-2005, which is currently incorporated by reference in the Manufactured Home Construction and Safety Standards. In addition, the requirement for installing service equipment in or on the home is revised in paragraph (k)(3) of this section by referencing the appropriate articles of the NEC, NFPA 70-2005.

Section 3280.804(f) is amended by requiring the distribution panelboard to be located in an accessible location and not located in a bathroom or clothes closet. This revision is consistent with requirements for acceptable locations for electrical distribution panels in residential model codes and with the NEC.

The final rule amends § 3280.805, by requiring all countertop outlets in the kitchen to be supplied by not less than two of the small appliance branch circuits. However, one or more of the small appliance branch circuits may also supply other receptacle outlets in the kitchen,

pantry, dining room, and breakfast room. In addition, the final rule amends § 3280.805(a)(3)(vi) by requiring that bathroom receptacle outlets be supplied by at least one 20 ampere branch circuit. While such circuits can have no other outlets, it is permissible to place the outlet for a heat tape or pipe heating cable on a bathroom circuit, provided that all of the bathroom outlets are on the load side of the ground fault circuit interrupter.

Section 3280.806(d) is revised by not including receptacle outlets in the floor that are 18 inches or more from the wall as part of the required receptacle outlets for the room; by permitting the heat tape or pipe heating cable outlet to be on the bathroom circuit, provided that all bathroom outlets are on the load side of the ground fault circuit interrupter; and by requiring receptacles in any countertop to not be in a face-up position. These changes are consistent with the requirements in residential model codes and the NEC.

#### J. Revisions to Standards Incorporated by Reference (Reference Standards)

The following is a list of the standards incorporated by reference by this final rule. Each reference standard is preceded with an indicator to identify the type of change being made. A new reference standard being added is indicated by the designation “N,” while a reference standard being updated is indicated by the designation “U.” The sections of the Construction and Safety Standards that are being amended by each modification are also shown on the right of each reference standard being added or updated.

N			
AAMA/WDMA/CSA 101/		North American Fenestration	3280.403(b)
I.S.2/A440-08		Standard Specification for Windows,	3280.403(e)
		Doors and Skylights	
U			
ANSI Z21.23	1993	Gas Appliance Thermostats	3280.703
N			
ANSI A208.2	2002	Medium Density Fiberboard (MDF)	3280.304(b)
		for Interior Applications	

N				
ANSI/IAS	1997	Fuel Gas Piping Systems Using	3280.705(b)	
LC-1		Corrugated Stainless Steel Tubing		
U				
ANSI Z97.1 2004	2004	Standard for Safety Glazing Materials used in Buildings -- Safety Performance Specifications and Methods of Test	3280.113(c)	
U				
APA S 812R	1998	Design and Fabrication of Glued Plywood Lumber Beams Plywood Design Supplement #2	3280.304(b)	
U				
APA U 814H	1993	Design and Fabrication of Plywood Sandwiched Panels Plywood Design Supplement #4	3280.304(b)	
U				
APA U 813L	1996	Design and Fabrication of Plywood Stressed Skin Panels, Plywood Design Supplement # 3	3280.304(b)	
N				
APA E30R	2001	Engineered Wood Construction Guide	3280.304(b)	
N				
ASSE 1016	2005	Performance Requirements for Automatic Compensating Values for Individual Showers and Tub/Shower Combinations	3280.607(b)	
U				
ASTM C564	1997	Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings	3280.604(b)(2) 3280.611(d)	
U				
ASTM C920	2002	Standard Specification for Elastomeric Joint Sealants	3280.611(d)	
U				
ASTM D3953	1997	Standard Specification for Strapping, Flat Steel, and Seals	3280.306(b) 3280.306(g)	



U	ASTM D4635	2001	Standard Specification for Polyethylene Films Made from Low-density Polyethylene for General Use and Packaging Applications	3280.611(d)
N	ASTM F876	2010	Standard Specification for Crosslinked Polyethylene (PEX) Tubing	3280.604(b)(2)
N	ASTM F877	2007	Standard Specification for Crosslinked Polyethylene (PEX) Plastic Hot- and Cold-Water Distribution Systems	3280.604(b)(2)
U	NFPA 31	2001	Standard for the Installation of Oil Burning Equipment	3280.703 3280.707(f)
N	NFPA 255	1996	Standard Method of Surface Burning Characteristics of Building Materials	3280.207(a)
N	NFPA 253	2000	Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Source	3280.207(c)
U	NIST PS 2-04	2004	Voluntary Product Standard Performance Standard for Wood-Based Structural-Use Panels	3280.304(b)
N	RADCO DS-010	1991	Decorative Gas Appliances for Installation in Solid Fuel Burning Appliances	3280.703
N	UL 923	2002	Microwave Cooking Appliances	3280.204(c)
N	CAN/ULC S102.2-M88	1988	Standard Method of Test for Surface Burning Characteristics of Flooring,	3280.207(b)

Floor Covering, and Miscellaneous  
Materials and Assemblies,

U			
UL 181	2003	Factory Made Air Ducts and Air Connectors	3280.702 3280.703 3280.715(a)

**K. Accessibility Requirements for Persons with Disabilities**

In some situations, manufactured housing units subject to HUD’s Manufactured Home Construction and Safety Standards may be provided through a program or activity that receives federal financial assistance from HUD. When this is the case, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and HUD’s implementing regulations at 24 CFR part 8 are applicable, including the requirements at 24 CFR 8.22 that address accessibility in new construction. However, these requirements are not applicable to any individual or buyer that obtains Federal Housing Administration financing when purchasing a manufactured housing unit. When working with a recipient of HUD funds, manufacturers must be prepared to produce manufactured housing units that meet the accessibility standards provided in 24 CFR part 8. There regulations currently incorporate the Uniform Federal Accessibility Standards (UFAS) (see 24 CFR 8.32).

**IV. Findings and Certifications**

**Regulatory Review – Executive Orders 12866 and 13563**

Under Executive Order 12866 (Regulatory Planning and Review), a determination must be made whether a regulatory action is significant and therefore, subject to review by the Office of Management and Budget (OMB) in accordance with the requirements of the order. Executive Order 13563 (Improving Regulations and Regulatory Review) directs executive agencies to analyze regulations that are “outmoded, ineffective, insufficient, or excessively burdensome, and

to modify, streamline, expand, or repeal them in accordance with what has been learned.

Executive Order 13563 also directs that, where relevant, feasible, and consistent with regulatory objectives, and to the extent permitted by law, agencies are to identify and consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public.

This rule is not a "significant regulatory action," as defined in section 3(f) of the Order, and it was not reviewed by OMB. As the preamble highlights, this rule amends several construction and safety standards under the National Manufactured Housing and Construction and Safety Standards Act of 1974. However, most of the changes codify existing practices or conform HUD standards to existing building codes.

Only two standards included in this rule have an impact on the production cost of manufactured homes: the requirement that shower and bath valves use anti-scald mixing valves, and the increase in minimum insulation levels for cross-under ducts. HUD's review of this final rule determined that it will impose costs equaling \$4.057 million and create discounted present value of benefits totaling \$6.264 million to \$14.069 million, depending on the discount rate. HUD's analysis, as discussed herein, uses a cohort analysis to examine the benefits and costs generated by these changes as applied to a single year's production of manufactured homes. More specifically, the costs associated with these changes are one-time costs at the time of production, while the benefits from the anti-scald valve and increased insulation accrue throughout the life of the home.

Currently, producers of manufactured housing may use non-pressure balanced mixing valves in bathtubs and showers. The cost of non-pressure balanced mixing value generally totals \$30 per valve. This final rule estimates the per-unit cost to producers to purchase pressure balanced/anti-scald mixing valve to be \$55, or an increase of \$25 per valve. The average number

of mixing valves is one per single-section home and two per multisection home. Thus, the cost is \$25 per single-section home and \$50 per multisection home.

The number of annual manufactured home placements since 1999 has decreased considerably. The annual rate of placements in 2009 was estimated at 58,100. Of these, 20,900 were estimated to be single-section homes, 36,000 were estimated to be double-section homes, and 1,200 were estimated to have more than two sections. Although this trend in annual placements has continued to decrease, this analysis assumes an annual placement of 58,100 manufactured homes. In addition, this analysis assumes that the cost of requiring the use of an anti-scald valve at the point of production of the home is less than installation at some later time. This assumption is based on the fact that replacing a mixing valve with an anti-scald valve at some later date would require the use of a licensed plumber for several hours to make the change and a higher cost to purchase the anti-scald valve(s) due to the volume purchasing power of manufacturers as compared to individual purchasers.

Accordingly, based on this annual placement rate, the total cost of the anti-scald valve requirement is \$522,500 for single-section homes (\$25 per home \* 20,900 single-section homes). For multisection homes, the total cost is \$1.86 million (\$50 per home \* 37,200 multisection homes). The combined cost totals \$2.383 million. (Note: These cost estimates are conservative, as the annual number of placements since 2010 did not exceed the rate of placements assumed in the analysis.)

The second cost comes from the increase in the minimum insulation levels for cross-under ducts. These ducts are used in multisection homes to carry heat from one section to another. Thus, there is no cost increase for single-section homes. The cost per square foot of insulation for multisection homes would increase from \$1.25 per square foot of R-4 insulated

cross-under duct to \$3.50 per square foot of R-8 insulated cross-under duct, or \$2.25 per square foot. On average there are 20 square feet of insulation needed per multisection home. Thus, the total cost of increasing the minimum insulation level is \$1.674 million (\$2.25 per square foot \* 20 square feet per home \* 37,200 homes). (Note: These cost estimates are conservative, as the annual number of placements since 2010 did not exceed the rate of placements assumed in the analysis.)

In estimating the benefits of these two requirements, HUD has considered that requiring anti-scald valves would reduce the number of injuries and deaths resulting from tap water scald burns. Although statistics specific to scald burns in manufactured homes are unavailable, according to Safe Kids, a nonprofit organization dedicated to preventing accidental childhood injury, hot tap water accounts for nearly 25 percent of all scald burns among children and is associated with more deaths and hospitalizations than any other hot liquid burns. Statistics reported by the CDC indicate that almost 3,000 people are hospitalized annually due to scald burns from tap water in the home<sup>3</sup>. The Safe Kids organization, however, reports that in 2002, 22,600 children received emergency room treatments for scald burns<sup>4</sup>, approximately 25 percent (5,560) coming from hot tap water. This analysis uses the CDC estimate of 3,000, which is a conservative estimate that represents the lower bound of scald injuries prevented.

The Safe Kids organization estimates that hospital costs for admitted scald burn patients average \$22,700.<sup>5</sup> Although this estimate includes only children under the age of 14, this group comprises a large percentage of scald burn injuries. Finally, based on the number of occupied

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<sup>3</sup> Centers for Disease Control and Prevention and U.S. Department of Housing and Urban Development. Healthy Housing Reference Manual. Atlanta: U.S. Department of Health and Human Services, 2006.

<sup>4</sup> Safe Kids website: [http://www.usa.safekids.org/tier3\\_cd.cfm?folder\\_id=540&content\\_item\\_id=1011](http://www.usa.safekids.org/tier3_cd.cfm?folder_id=540&content_item_id=1011).

<sup>5</sup> National SAFE KIDS Campaign (NSKC). Burn Injury Fact Sheet. Washington (DC): NSKC, 2004.

housing units in the 2007 American Housing Survey (AHS)<sup>6</sup>, newly placed manufactured housing accounts for 0.05% of occupied housing units. If tap water scalds are evenly distributed across all housing units<sup>7</sup>, then 1.5 burns (3,000 total scald burns \* 0.05% in newly placed manufactured housing) could be prevented annually for annual savings of \$35,744 (3,000 burn victims \* 0.05% in manufactured homes \* \$22,700 in hospital costs)<sup>8</sup>. OMB Circular A-94, which provides guidance on economic analyses required under Executive Order 12866, requires the present discounted value of annual benefits using alternative discount rates 3 percent and 7 percent. The discounted present value of savings from the use of anti-scald valves totals \$1.227 million using the 3 percent rate and \$0.546 million using the 7 percent rate. Note that using the Safe Kids estimate of 5,560 would increase these amounts to almost 3 scald burns and \$66,246 in hospital care avoided annually. The discounted present value of savings assuming the higher estimate of burns totals \$2.274 million using the 3 percent discount rate and \$1.013 million using the 7 percent discount rate.

In addition to prevented injuries and hospitalizations, the anti-scald valve requirement will also reduce the number of deaths resulting from scald burns. Aside from the 3,000 to 5,560 scald burns occurring each year, the National Coalition to Prevent Childhood Injury estimates that 100 deaths result from scald burns annually. As explained above, newly placed manufactured housing represents 0.05 percent of occupied housing units. Thus, if tap water scalds are evenly distributed across all housing units, then 0.05 burns annually, or one death every 20 years, would be prevented. U.S. Federal Government estimates of the value of a human

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<sup>6</sup> See 2007 AHS, Table 2-1.

<sup>7</sup> If state and local codes that regulate traditional “stick-built” housing predominantly require anti-scald valves, then this distribution may not be even across housing types. For this reason, manufactured homes may account for a larger than proportionate share of scald burns.

<sup>8</sup> Anti-scald valves decrease the maximum water temperature to 120 degrees. At this temperature, it would take 8 minutes of exposure to receive second-degree burns and 10 minutes for third-degree burns. While this does not

life range from \$5 million used by the Consumer Product Safety Commission to \$7.22 million used by the EPA. Using the lower estimate of \$5 million, the discounted present value of prevented deaths from the use of anti-scald valves totals \$9.010 million using the 3 percent rate and \$4.012 million using the 7 percent rate.

The insulation requirement will increase the energy efficiency of manufactured homes, which will decrease annual energy costs for homeowners. Based on estimates from the DOE's Energy Gauge model, owners of multisection homes, to which this requirement applies, would save approximately \$3 in energy costs annually. Thus, the total annual benefits of this provision is \$111,600 (\$3 per home \* 37,200 homes). Calculating the present value of the stream of benefits into the future yields a discounted present value of \$3.832 million in energy savings using the 3 percent discount rate and \$1.706 million using the 7 percent discount rate.

A summary of HUD's calculation of benefits from the anti-scald valve and insulation requirements follows:

#### **Benefits of Final Rule**

<b>Benefits of Anti-Scald Valve Requirement</b>	
<b><i>Value of Injuries Prevented</i></b>	
Annual hospitalizations due to scald burns from tap water	3,000
New manufactured housing share of total occupied housing units	0.05%
Average Cost of Scald Burn Victim	22,700
<b>Annual Value of Benefits</b>	<b>\$35,744</b>
<b>Discounted Present Value (3% Discount Rate)</b>	<b>\$1,227,178</b>
<b>Discounted Present Value (7% Discount Rate)</b>	<b>\$546,358</b>
<b><i>Value of Deaths Prevented</i></b>	
Annual deaths due to scald burns from tap water	100
New manufactured housing share of total occupied housing units	0.05%
Value of life	5,000,000

completely eliminate the risk of scald burns, this risk does not need to be completely eliminated for benefits to be realized.

<b>Value of Benefits</b>	<b>\$262,438</b>
<b>Discounted Present Value (3% Discount Rate)</b>	<b>\$9,010,323</b>
<b>Discounted Present Value (7% Discount Rate)</b>	<b>\$4,011,532</b>

<b>Benefits of Insulation Requirement</b>
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	<b>Single</b>	<b>Multi</b>	<b>Total</b>
Number of Homes	20,900	37,200	58,100
Annual Savings per Home	0.00	3.00	
<b>Annual Value of Benefits</b>	<b>\$0</b>	<b>\$111,600</b>	<b>\$111,600</b>

<b>Discounted Present Value (3% Discount Rate)</b>	<b>\$3,831,566</b>
<b>Discounted Present Value (7% Discount Rate)</b>	<b>\$1,705,872</b>

<b>Discounted Present Value of Benefits of Rule</b>
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	<b>Discount Rate</b>	
	<b>3%</b>	<b>7%</b>
Anti-Scald Valve Requirement	\$10,237,502	\$4,557,890
<i>Injuries Prevented</i>	1,227,178	546,358
<i>Deaths Prevented</i>	9,010,323	4,011,532
Insulation Requirement	3,831,566	1,705,872
<b>Discounted Present Value of Benefits</b>	<b>\$14,069,068</b>	<b>\$6,263,762</b>

**sources:**

<sup>1</sup>American Burn Association.

<sup>2</sup>American Housing Survey (AHS), U.S. Department of Housing and Urban Development.

<sup>3</sup>National Safe Kids Campaign.

In summary, this final rule will impose costs equaling \$4.057 million and create discounted present value of benefits totaling \$6.264 million to \$14.069 million, depending on the discount rate. Thus, the total impact of this rule, the sum of the total costs and benefits, equals between \$10.321 million and \$18.126 million annually. (Note: These cost estimates are conservative, as the annual number of placements since 2010 did not exceed the rate of placements assumed in the analysis.)

The docket file is available for public inspection in the Regulations Division, Office of General Counsel, Department of Housing and Urban Development, 451 7th Street, SW,



Washington, DC 20410-0500. Due to security measures at the HUD Headquarters building, an advance appointment to review the public comments must be scheduled by calling the Regulations Division at 202-402-3055 (this is not a toll-free number). Individuals with speech or hearing impairments may access this number through TTY by calling the Federal Information Relay Service at 800-877-8339.

#### Paperwork Reduction Act

The modified information collection requirements contained in this final rule, at §§ 3280.510, 3280.511, 3280.804, and 3280.813, have been submitted to the Office of Management and Budget (OMB) for review under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501-3520). In accordance with the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information, unless the collection displays a currently valid OMB control number. OMB has issued HUD the control number 2502-0253 for the information collection requirements under the current Manufactured Housing Construction and Safety Standards Program.

The public reporting burden for this modified collection of information is estimated to include the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. These modifications to the existing two labels would result in no additional burden hours for completing the information collection currently accepted under control number 2502-0253.

#### Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 establishes requirements for Federal agencies to assess the effects of their regulatory actions on state, local, and tribal governments and the private sector. This rule will not impose any Federal mandates on any

state, local, or tribal government or the private sector within the meaning of the Unfunded Mandates Reform Act of 1995.

#### Environmental Review

A Finding of No Significant Impact with respect to the environment was made at the proposed rule stage in accordance with HUD regulations at 24 CFR part 50, which implement section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)). The Finding of No Significant Impact remains applicable to this final rule and is available for public inspection between the hours of 8 a.m. and 5 p.m. weekdays in the Regulations Division, Office of General Counsel, Department of Housing and Urban Development, 451 7th Street, SW, Room 10276, Washington, DC 20410-0500. Due to security measures at the HUD Headquarters building, please schedule an appointment to review the finding by calling the Regulations Division at 202-402-3055 (this is not a toll-free number). Individuals with speech or hearing impairments may access this number through TTY by calling the Federal Information Relay Service at 800-877-8339.

#### Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) (5 U.S.C. 601 et seq.) generally requires an agency to conduct a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements, unless the agency certifies that the rule would not have a significant economic impact on a substantial number of small entities. This rule regulates establishments primarily engaged in making manufactured homes (NAICS 32991). The Small Business Administration's size standards define an establishment primarily engaged in making manufactured homes as small if it does not exceed 500 employees. Of the 222 firms included under this NAICS definition, 198 are small manufacturers that fall below the small business threshold of 500

employees. The final rule will apply to all of the manufacturers. The rule would thus affect a substantial number of small entities, but would not have a significant economic impact on these small entities.

Based on an analysis of the costs and the fact that a small manufacturer would just as likely produce homes at the higher end of the cost spectrum as would a major producer, evaluating the effect of the increase is not discernible based on the size of the manufacturing operation. For the reasons stated below, HUD knows of no instance of a manufacturer with fewer than 500 employees that would be economically affected significantly by this rule. As the preamble discusses, the overwhelming majority of the revisions to the Construction and Safety Standards proposed by this rule are directed to relieving burden on all manufacturers by having the Standards be consistent with current design and construction standards or state and local codes. Reducing the differences between the Federal standards for design and construction of manufactured homes with current industry standards reduces burden for all manufacturers.

As discussed under the “Regulatory Planning and Review” section of this preamble, the annual economic impact of this rule is not significant, since the changes made by this rule are largely changes conforming to current industry practices and current building codes. This assessment shows that this does not represent a significant economic effect on either an industry-wide or per-unit basis.

The relatively small increase in cost for the manufacturer associated with this proposed rule would not impose a significant burden on a small business for manufacturing homes that can cost the purchaser between \$40,000 and \$100,000. Therefore, although this rule would affect a substantial number of small entities, it would not have a significant economic impact on them.

Therefore, the undersigned certifies that this rule will not have a significant impact on a substantial number of small entities.

#### Executive Order 13132, Federalism

Executive Order 13132 (entitled “Federalism”) prohibits an agency from publishing any rule that has federalism implications if the rule either: (i) imposes substantial direct compliance costs on state and local governments and is not required by statute, or (2) preempts state law, unless the agency meets the consultation and funding requirements of section 6 of the Order. This final rule does not have federalism implications, within the meaning of the Executive Orders, and would not impose substantial direct compliance costs on state and local governments nor preempt state law within the meaning of the Order.

#### **V. Incorporation by Reference**

These incorporated standards are approved by the Director of the Federal Register for incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of these standards may be obtained from the organization that developed the standard. As described in § 3280.4, these standards are also available for inspection at HUD’s Office of Regulatory Affairs and Manufactured Housing and the National Archives and Records Administration (NARA). This final rule incorporates standards developed by the following organizations:

**AAMA** – American Architectural Manufacturers Association, 1827 Walden Office Square, Suite 550, Schaumburg, IL 60173, telephone number 847-303-5664, fax number 847-303-5774, website: <http://www.aamanet.org>;

**ANSI** – American National Standards Institute, 25 West 43rd Street, 4th floor, New York, NY 10018, telephone number 212-642-4900, fax number 212-398-0023, website:

<http://www.ansi.org>.

**APA** – The Engineered Wood Association, 7011 South 19th Street, Tacoma, WA 98411, telephone number 253-565-6600, fax number 253-565-7265, website:

<http://www.apawood.org>.

**ASSE** – American Society of Sanitary Engineering, 901 Canterbury, Suite A, Westlake, OH 44145, telephone number 440-835-3040, fax number 440-835-3488, website: <http://www.asse-plumbing.org>.

**ASTM** – American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428, telephone number 610-832-9500, fax number 610-832-9555, website: <http://www.astm.org>.

**CSA (IAS)** – CSA International (formerly International Approval Services), 850 East Pleasant Valley Road, Independence, OH 44131, telephone number 216- 524-4990, fax number 216- 642-3463, website: <http://www.csa-international.org>.

**NFPA** – National Fire Protection Association, Batterymarch Park, Quincy, MA 02269, telephone number 617-770-3000, fax number 617-770-0700, website: <http://www.nfpa.org>.

**PS** – U.S. Department of Commerce, National Institute of Standards and Technology (NIST), Office of Engineering Standards, Room A-166, Technical Building, Washington, DC 20234 and Voluntary Product Division, 100 Bureau Drive, Stop 2100, Gaithersburg, MD 20899-2100, telephone number 301- 975-4000, fax number 301- 975-4715, website: <http://www.nist.gov>.

**RADCO** – Resources, Applications, Designs, & Controls, Inc., 3220 East 59th Street, Long Beach, CA 90805, telephone number 562-272-7231, fax number 562-529-7513, website:

<http://www.astm.org>.

**UL** – Underwriters Laboratories, 333 Pfingsten Road, Northbrook, IL 60062, telephone number 847-272-8800, fax number 847-509-6257, website: <http://www.ul.com>.

**WDMA** – Window & Door Manufacturers Association (WDMA), (previously known as the National Wood Window and Door Association, (NWWDA)), 2025 M Street, NW, Suite 800, Washington, DC 20036-3309, telephone number, 202-367-1157, website:

<https://www.wdma.com>.

#### **List of Subjects in 24 CFR Part 3280**

Housing standards, Incorporation by reference, Manufactured homes.

#### **Catalog of Federal Domestic Assistance**

The Catalog of Federal Domestic Assistance number for Manufactured Housing Construction and Safety Standards is 14.171.

Accordingly, for the reasons stated in the preamble, HUD is amending 24 CFR part 3280 as follows:

### **PART 3280--MANUFACTURED HOME CONSTRUCTION AND SAFETY STANDARDS**

1. The authority citation for part 3280 continues to read as follows:

**Authority:** 42 U.S.C. 3535(d), 5403, and 5424.

2. Revise § 3280.4 to read as follows:

#### **§ 3280.4 Incorporation by reference.**

(a) The specifications, standards, and codes of the following organizations are incorporated by reference in 24 CFR part 3280 (this Standard) pursuant to 5 U.S.C. 552(a) and 1 CFR part 51 as though set forth in full. The incorporation by reference of these standards has been approved by the Director of the Federal Register. Incorporated standards have the same force and effect as this Standard (24 CFR part 3280), except that whenever reference standards and this Standard are inconsistent, the requirements of this Standard prevail to the extent of the inconsistency. The Department will enforce the listed editions of material incorporated by this section. Where two or more incorporated standards are equivalent in application, the manufacturer may use either standard. If a later edition is to be enforced, the Department will publish a notice of change in the Federal Register. These incorporated standards are available for purchase from the organization that developed the standard at the corresponding addresses noted below. Incorporated standards are available for inspection at the Office of Manufactured Housing Program, Manufactured Housing and Construction Standards Division, U.S. Department of Housing and Urban Development, 451 Seventh Street, SW, Room B-133, Washington, DC 20410. Copies of incorporated standards that are not available from their producer organizations may be obtained from the Office of Manufactured Housing Programs. These standards are also available for inspection at the National Archives and Records Administration (NARA). For more information on the availability of this material at NARA, call 202-741-6030 or go to [http://www.archives.gov/federal\\_register](http://www.archives.gov/federal_register).

(b) Air Conditioning & Refrigeration Institute (ARI), 4100 North Fairfax Drive, Suite 200, Arlington, VA 22203, telephone number 703-524-8800, fax number 703-528-3816, website: <http://www.lightindustries.com/ARI/>.

(1) ANSI/ARI Standard 210/240–89, Unitary Air-Conditioning and Air-Source Heat Pump Equipment, IBR approved for §§ 3280.511(b), 3280.703, and 3280.714(a),

(2) [Reserved].

(c) Aluminum Association (AA), 1525 Wilson Blvd., Suite 600, Arlington, VA 22209; telephone number 703-358-2960, fax number 703-358-3921; website:

<http://www.aluminum.org>.

(1) Aluminum Design Manual, Specifications and Guidelines for Aluminum Structures, Part 1-A, Sixth Edition, October 1994, IBR approved for § 3280.304(b).

(2) Aluminum Design Manual, Specifications and Guidelines for Aluminum Structures, Part 1-B, First Edition, October 1994, IBR approved for § 3280.304(b).

(d) American Architectural Manufacturers Association (AAMA), 1827 Walden Office Square, Suite 550, Schaumburg, IL 60173, telephone number 847-303-5664, fax number 847-303-5774, website: <http://www.aamanet.org>.

(1) AAMA 1503.1–88, Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors, and Glazed Wall Sections, IBR approved for § 3280.508(e).

(2) AAMA 1600/I.S.7–00, Voluntary Specification for Skylights, 2003 IBR approved for § 3280.305(c).

(3) AAMA 1701.2–95, Voluntary Standard Primary Window and Sliding Glass Door for Utilization in Manufactured Housing, IBR approved for §§ 3280.403(e) and 3280.404(b).

(4) AAMA 1702.2–95, Voluntary Standard Swinging Exterior Passage Door for Utilization in Manufactured Housing, IBR approved for § 3280.405(b) and (e).



(5) AAMA Standard 1704–1985, Voluntary Standard Egress Window Systems for Utilization in Manufactured Housing, IBR approved for § 3280.404(b).

(6) AAMA/WDMA/CSA/101/I.S.2/A440-08 North American Fenestration Standard/Specification for Windows, Doors and Skylights, January 2008, IBR approved for § 3280.403(b) and (e).

(7) ANSI/AAMA/NWDA 101/I.S.2–97, Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors, IBR approved for § 3280.304(b).

(e) American Forest and Paper Association (AFPA), 1111 Nineteenth Street, Suite 800, Washington, DC 20036 (previously named National Forest Products Association (NFPA), telephone number 1-800-878-8878, website: <http://www.afandpa.org>.

(1) AFPA, Design Values for Joists and Rafters 1992, IBR approved for § 3280.304(b).

(2) AFPA PS–20–70, Span Tables for Joists and Rafters, 1993, IBR approved for § 3280.304(b).

(3) ANSI/AFPA NDS–2001, National Design Specifications for Wood Construction, 2001 Edition, with Supplement, Design Values for Wood Construction, November 30, 2001, IBR approved for § 3280.304(b).

(4) AFPA, Wood Structural Design Data, 1986 Edition with 1992 Revisions, IBR approved for § 3280.304(b).

(f) American Gas Association (AGA), 400 North Capitol Street, NW, Washington, DC 20001, telephone number 202-824-7000, website: <http://www.aga.org/Pages/default.aspx>.

(1) AGA No. 3–87, Requirements for Gas Connectors for Connection of Fixed Appliances for Outdoor Installation, Park Trailers, and Manufactured (Mobile) Homes to the Gas Supply, IBR approved for § 3280.703.

(2) [Reserved].

(g) American Hardboard Association (AHA), 1210 West NW Highway, Palatine, IL 60067, website: <http://hardboard.org>.

(1) ANSI/AHA A135.4–1995, Basic Hardboard, IBR approved for § 3280.304(b).

(2) ANSI/AHA A135.5–1995, Prefinished Hardboard Paneling, IBR approved for § 3280.304(b).

(3) ANSI/AHA A135.6–1998, Hardboard Siding, IBR approved for § 3280.304(b).

(h) American Institute of Steel Construction (AISC), One East Wacker Drive, Chicago, IL 60601, telephone number 312-670-2400, fax number 312-670-5403, website: <http://www.aisc.org/>.

(1) AISC–S335, 1989. Specification for Structural Steel Buildings—Allowable Stress Design and Plastic Design (except for the following parts of this standard which are not incorporated by reference: 1.3.3, 1.3.4, 1.3.5, 1.3.6, 1.4.6, 1.5.1.5, 1.5.5, 1.6, 1.7, 1.8, 1.9, 1.10.4 through 1.10.7, 1.10.9, 1.11, 1.13, 1.14.5, 1.17.7 through 1.17.9, 1.19.1, 1.19.3, 1.20, 1.21, 1.23.7, 1.24, 1.25.1 through 1.25.5, 1.26.4, 2.3, 2.4, 2.8 through 2.10), June 1, 1989, IBR approved for §§ 3280.304(b) and 3280.305(j).

(2) [Reserved].

(i) American Iron and Steel Institute (AISI), 25 Massachusetts Ave., NW, Suite 800, Washington, DC 20001, telephone number 202-452-7100, website: <http://www.steel.org>.

(1) AISI, Specification for the Design of Cold-Formed Steel Structural Members, 1996, IBR approved for §§ 3280.304(b) and 3280.305(j).

(2) [Reserved].

(j) American National Standards Institute (ANSI), 25 West 43rd Street, 4th floor, New York, NY 10018, telephone number 212-642-4900, fax number 212-398-0023, website: <http://www.ansi.org>.

(1) ANSI A112.14.1–1975, Backflow Valves, IBR approved for § 3280.604(b).

(2) ANSI A112.19.5–1979, Trim for Water Closet, Bowls, Tanks, and Urinals, IBR approved for § 3280.604(b).

(3) ANSI/AITC A190.1–1992, For wood products–Structural Glued Laminated Timber, IBR approved for § 3280.304(b).

(4) ANSI A208.1–1999, Particleboard, IBR approved for § 3280.304(b).

(5) ANSI A208.2–2002, Medium Density Fiberboard (MDF) For Interior Applications, approved May 13, 2002, IBR approved for § 3280.304(b).

(6) ANSI B16.18–1984, Cast Copper Alloy Solder-Joint Pressure Fittings, IBR approved for § 3280.604(b).

(7) ANSI C72.1–1972, section 4.3.1, Household Automatic Electric Storage Type Water Heaters, IBR approved for § 3280.707(d).

(8) ANSI/IAS LC 1–1997, Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing (CSST), approved October 28, 1996, IBR approved for § 3280.705(b).

(9) ANSI Z21.1–2000, Household Cooking Gas Appliances, IBR approved for § 3280.703.

(10) ANSI Z21.5.1–1999, Gas Clothes Dryers Volume 1, Type 1 Clothes Dryers, with Addendum Z21.5.1a–1999, IBR approved for § 3280.703.

(11) ANSI Z21.10.1–1998, Gas Water Heaters—Volume 1, Storage Water Heaters with Input Ratings of 75,000 BTU per hour or Less, with Addendum Z21.10.1a–2000, IBR approved for §§ 3280.703 and 3280.707(d).

(12) ANSI Z21.15–1997, Manually Operated Gas Valves for Appliances, Appliance Connector Valves and Hose End Valves, IBR approved for §§ 3280.703 and 3280.705(c).

(13) ANSI Z21.19–1990, with Addendum ANSI Z21.19a–1992 and Z21.19b–1995, Refrigerators Using Gas Fuel, IBR approved for § 3280.703.

(14) ANSI Z21.20 with Addendum Z21.20a–2000, Automatic Gas Ignition Systems and Components, IBR approved for § 3280.703.

(15) ANSI Z21.21–2000, Automatic Valves for Gas Appliances, IBR approved for § 3280.703.

(16) ANSI Z21.22–1999, Relief Valves for Hot Water Supply Systems, IBR approved for §§ 3280.604(b) and 3280.703.

(17) ANSI Z21.23–1993, Gas Appliance Thermostats, approved August 10, 1993, IBR approved for § 3280.703.

(18) ANSI Z21.24–1997/CGA 6.10–M97, Connectors for Gas Appliances, IBR approved for § 3280.703.

(19) ANSI Z21.40.1–1996/CGA 2.91–M96, Gas-Fired, Heat Activated Air Conditioning and Heat Pump Appliances, IBR approved for §§ 3280.703 and 3280.714(a).

(20) ANSI Z21.47–1990 with Addendum Z21.47a–1990 and Z21.47b–1992, Gas-Fired Central Furnaces (Except Direct Vent System Central Furnaces), IBR approved for § 3280.703.

(21) ANSI Z34.1–1993, Third-Party Certification Programs for Products, Processes, and Services, IBR approved for §§ 3280.403(e) and 3280.405(e).

(22) ANSI Z97.1–2004, Standard for Safety Glazing Materials used in Buildings - Safety Performance Specifications and Methods of Test, copyright 2004, IBR approved for §§ 3280.113(c), 3280.304(b), 3280.403(d)(1), 3280.604(b), and 3280.607(b).

(23) ANSI Z124.1–1987, Plastic Bathtub Units with Addendum Z124.1a–1990 and Z124.1b–1991, IBR approved for § 3280.604(b).

(24) ANSI Z124.2–1987, Plastic Shower Receptors and Shower Stalls with Addendum Z124.2a–1990, IBR approved for § 3280.604(b).

(25) ANSI Z124.3–1986, Plastic Lavatories with Addendum Z124.3a–1990, IBR approved for § 3280.604(b).

(26) ANSI Z124.4–1986, Plastic Water Closets, Bowls, and Tanks with Addenda Z124.4a–1990, IBR approved for § 3280.604(b).

(27) ANSI Z124.5–1997, Plastic Toilet (Water Closets) Seats, IBR approved for § 3280.604(b).

(28) ANSI Z124.7–1997, Prefabricated Plastic Spa Shells, IBR approved for § 3280.604(b).

(29) ANSI Z–124.9–1994, Plastic Urinal Fixtures, IBR approved for § 3280.604(b).

(k) The Engineered Wood Association (APA) (formerly the American Plywood Association), 7011 South 19<sup>th</sup> Street, Tacoma, WA 98411, telephone number 253-565-6600, fax number 253-565-7265, website: <http://www.apawood.org>.

(1) APA D410A–2004, Panel Design Specification, IBR approved for § 3280.304(b).

(2) APA E30P–1996, APA Design/Construction Guide, Residential and Commercial Structures, IBR approved for § 3280.304(b).

(3) APA E30R, Engineered Wood Construction Guide, revised January 2001, IBR approved for § 3280.304(b).

(4) APA H815E–1995 (PDS Supplement #5), Design and Fabrication of All-Plywood Beams, IBR approved for § 3280.304(b).

(5) APA S 811M–1990 (PDS Supplement 1), Design and Fabrication of Plywood Curved Panels, IBR approved for § 3280.304(b).

(6) APA S 812R, Design and Fabrication of Glued Plywood-Lumber Beams, revised November 1998, Supplement #2, July 1992 IBR approved for § 3280.304.

(7) APA U 813L, Design and Fabrication of Plywood Stressed-Skin Panels, revised April 1996, Supplement # 3, August 1992, IBR approved for § 3280.304(b).

(8) APA U 814H, Design and Fabrication of Plywood, Sandwiched Panels, revised September 1993, Supplement #4, March 1990, IBR approved for § 3280.304(b).

(l) American Society of Civil Engineers (ASCE), 1801 Alexander Bell Drive, Reston, VA 20191, telephone number 800-548-2723, website: <http://www.asce.org>.

(1) ANSI/ASCE 7–88, Minimum Design Loads for Buildings and Other Structures, IBR approved for §§ 3280.5(f), 3280.304(b), and 3280.305(c).

(2) SEI/ASCE 8–02, Specification for the Design of Cold-Formed Stainless Steel Structural Members, 2002, IBR approved for §§ 3280.304(b) and 3280.305(j).

(3) ASCE 19-96, Structural Applications of Steel Cables for Buildings, IBR approved for § 3280.304(b).

(m) American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), 1791 Tullie Circle, NE, Atlanta, GA 30329, telephone number 404-636-8400, fax number 404-321-5478, website: <https://www.ashrae.org/home/>.

(1) 1997 ASHRAE Handbook of Fundamentals, Inch-Pound Edition (1997), chapters 22 through 27, (except for the following parts of this standard that are not incorporated by reference: 23.1 Steel Frame Construction; 23.2 Masonry Construction; 23.3 Foundations and Floor Systems; 23.15 Pipes; 23.17 Tanks, Vessels, and Equipment; 23.18 Refrigerated Rooms and Buildings; 24.18 Mechanical and Industrial Systems; 25.19 Commercial Building Envelope Leakage; 27.9 Calculation of Heat Loss from Crawl Spaces). IBR approved for §§ 3280.508(a), 3280.508(e), and 3280.511(a).

(2) [Reserved].

(n) ASME (formally the American Society of Mechanical Engineers), Two Park Avenue, New York, NY 10016-5990, telephone number 800-843-2763, website: <http://www.asme.org/>.

(1) ASME A112.1.2–1991, Air Gaps in Plumbing Systems, IBR approved for § 3280.604(b).

(2) ANSI/ASME A112.4.1–1993, Water Heater Relief Valve Drain Tubes, IBR approved for § 3280.604(b).

(3) ANSI/ASME A112.4.3–1999, Plastic Fittings for Connecting Water Closets to the Sanitary Drainage System, IBR approved for § 3280.604(b).

(4) ASME/ANSI A112.18.1M–1989, Plumbing Fixture Fittings, IBR approved for § 3280.604(b).

(5) ASME A112.18.3M–1996, Performance Requirements for Backflow Protection Devices and Systems in Plumbing Fixture Fittings, IBR approved for § 3280.604(b).

(6) ASME A112.18.6–1999, Flexible Water Connectors, IBR approved for § 3280.604(b).

(7) ASME A112.18.7–1999, Deck Mounted Bath/Shower Transfer Valves with Integral Backflow Protection, IBR approved for § 3280.604(b).

(8) ANSI/ASME A112.19.1M–1987, Enameled Cast Iron Plumbing Fixtures, IBR approved for § 3280.604(b).

(9) ANSI/ASME A112.19.2(M)–1990, Vitreous China Plumbing Fixtures, IBR approved for § 3280.604(b).

(10) ANSI/ASME A112.19.3M–1987, Stainless Steel Plumbing Fixtures (Designed for Residential Use), IBR approved for § 3280.604(b).

(11) ANSI/ASME A112.19.4(M)–1984, Porcelain Enameled Formed Steel Plumbing Fixtures, IBR approved for § 3280.604(b).

(12) ASME A112.19.6–1995, Hydraulic Performance Requirements for Water Closets and Urinals, IBR approved for § 3280.604(b).

(13) ASME/ANSI A112.19.7M–1987, Whirlpool Bathtub Appliances, IBR approved for § 3280.604(b).

(14) ASME/ANSI A112.19.8M–1989, Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, Hot Tubs, and Whirlpool Bathtub Appliances, IBR approved for § 3280.604(b).

(15) ASME A112.19.9M–1991, Non-Vitreous Ceramic Plumbing Fixtures, IBR approved for § 3280.604(b).

(16) ASME A112.19.10–1994, Dual Flush Devices for Water Closets, IBR approved for § 3280.604(b).

(17) ANSI/ASME A112.21.3M–1985, Hydrants for Utility and Maintenance Use, IBR approved for § 3280.604(b).



(18) ANSI/ASME B1.20.1–1983, Pipe Threads, General Purpose (Inch), IBR approved for §§ 3280.604(b), 3280.703, 3280.705(e), and 3280.706(d).

(19) ANSI/ASME B16.3–1992, Malleable Iron Threaded Fittings, IBR approved for § 3280.604(b).

(20) ANSI/ASME B16.4–1992, Gray Iron Threaded Fittings, IBR approved for § 3280.604(b).

(21) ANSI/ASME B16.15–1985, Cast Bronze Threaded Fittings, Classes 125 and 250, IBR approved for § 3280.604(b).

(22) ASME/ANSI B16.22–1989, Wrought-Copper and Copper Alloy Solder-Joint Pressure Fitting, IBR approved for § 3280.604(b).

(23) ASME B16.23–1992, Cast Copper Alloy Solder-Joint Drainage Fittings-DWV, IBR approved for § 3280.604(b).

(24) ASME/ANSI B16.26–1988, Cast Copper Alloy Fittings for Flared Copper Tubes, IBR approved for § 3280.604(b).

(25) ASME/ANSI B16.29–1986, Wrought Copper and Wrought Copper Alloy Solder-Joint Drainage Fittings-DWV, IBR approved for § 3280.604(b).

(26) ANSI/ASME B36.10–1979, Welding and Seamless Wrought Steel Pipe, IBR approved for §§ 3280.604(b), 3280.703, 3280.705(b), and 3280.706(b).

(o) American Society of Sanitary Engineering (ASSE), 901 Canterbury, Suite A, Westlake, OH 44145, phone number 440-835-3040, fax number 440-835-3488, website: <http://www.asse-plumbing.org>.

(1) ASSE 1001 (ANSI Approved 1990), Performance Requirements for Pipe Applied Atmospheric Type Vacuum Breakers, IBR approved for § 3280.604(b).

(2) ASSE 1002 Revision 5–1986 (ANSI/ASSE–1979), Performance Requirements for Water Closet Flush Tank Fill Valves (Ballcocks), IBR approved for § 3280.604(b).

(3) ASSE 1006 (ASSE/ANSI–1986), Plumbing Requirements for Residential Use (Household) Dishwashers, IBR approved for § 3280.604(b).

(4) ASSE 1007–1986, Performance Requirements for Home Laundry Equipment, IBR approved for § 3280.604(b).

(5) ASSE 1008–1986, Performance Requirements for Household Food Waste Disposer Units, IBR approved for § 3280.604(b).

(6) ASSE 1011–1981 (ANSI–1982), Performance Requirements for Hose Connection Vacuum Breakers, IBR approved for § 3280.604(b).

(7) ASSE 1014–1989 (ANSI–1990), Performance Requirements for Hand-held Showers, IBR approved for § 3280.604(b).

(8) ASSE 1016-2005, Performance Requirements for Automatic Compensating Valves for Individual Shower and Tub/Shower Combinations, approved January 2005, IBR approved for §§ 3280.604(b) and 3280.607(b).

(9) ASSE 1017–1986, Performance Requirements for Temperature Activated Mixing Valves for Primary Domestic Use, IBR approved for § 3280.604(b).

(10) ANSI/ASSE 1019–1978, Performance Requirements for Wall Hydrants, Frost Proof Automatic Draining, Anti-Backflow Types, IBR approved for § 3280.604(b)

(11) ASSE 1023 (ANSI/ASSE–1979), Performance Requirements for Hot Water Dispensers, Household Storage Type Electrical, IBR approved for § 3280.604(b).

(12) ASSE 1025 (ANSI/ASSE–1978), Performance Requirements for Diverters for Plumbing Faucets with Hose Spray, Anti-Siphon Type, Residential Applications, IBR approved for § 3280.604(b).

(13) ASSE 1037–1990 (ANSI–1990), Performance Requirements for Pressurized Flushing Devices (Flushometers) for Plumbing Fixtures, IBR approved for § 3280.604(b).

(14) ASSE 1051 Revised 1996 (ANSI 1998), Performance Requirements for Air Admittance Valves for Plumbing Drainage Systems – Fixture and Branch Devices, IBR approved for § 3280.604(b).

(p) American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, West Conshohocken, PA 19428, (610) 832–9500, fax number 610-832–9555, website:  
<http://www.astm.org>.

(1) ASTM A53–93. Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless, IBR approved for §§ 3280.604(b) and 3280.703.

(2) ASTM A74–92, Standard Specification for Cast Iron Soil Pipe and Fittings, IBR approved for § 3280.604(b).

(3) ASTM A539–99, Standard Specification for Electric-Resistance-Welded Coiled Steel Tubing for Gas and Fuel Oil Lines, IBR approved for §§ 3280.703, 3280.705(b), and § 3280.706(b).

(4) ASTM B42–93, Standard Specification for Seamless Copper Pipe, Standard Sizes, IBR approved for §§ 3280.604 and 3280.703.

(5) ASTM B43–91, Standard Specification for Seamless Red Brass Pipe, Standard Sizes, IBR approved for §§ 3280.604(b) and 3280.705(b).

(6) ASTM B88–93, Standard Specification for Seamless Copper Water Tube, IBR approved for §§ 3280.604, 3280.703, 3280.705(b), and 3280.706(b).

(7) ASTM B251–93, Standard Specification for General Requirements for Wrought Seamless Copper and Copper-Alloy Tube, IBR approved for §§ 3280.604 and 3280.703.

(8) ASTM B280–95a, Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service, IBR approved for §§ 3280.703, 3280.705(b), and 3280.706(b).

(9) ASTM B306–92, Standard Specification for Copper Drainage Tube (DWV), IBR approved for § 3280.604(b).

(10) ASTM C 36/C 36M–99, Standard Specification for Gypsum Wallboard, 1999, IBR approved for § 3280.304.

(11) ASTM C564–97, Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings, approved December 10, 1997, IBR approved for §§ 3280.604(b) and 3280.611(d).

(12) ASTM C920–02, Standard Specification for Elastomeric Joint Sealants, approved January 10, 2002, IBR approved for § 3280.611(d).

(13) ASTM D781–68 (Reapproved 1973), Standard Test Methods for Puncture and Stiffness of Paperboard, and Corrugated and Solid Fiberboard, IBR approved for §§ 3280.304(b), and 3280.305(g).

(14) ASTM D2235–88, Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings, IBR approved for § 3280.604(b).

(15) ASTM D2564–91a, Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems, IBR approved for § 3280.604(b).

(16) ASTM D2661–91, Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings, IBR approved for § 3280.604(b).

(17) ASTM D2665–91b, Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings, IBR approved for § 3280.604(b).

(18) ASTM D2846–92, Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Hot- and Cold-Water Distribution Systems, IBR approved for § 3280.604(b).

(19) ASTM D3309–92a, Standard Specification for Polybutylene (PB) Plastic Hot- and Cold-Water Distribution Systems, IBR approved for § 3280.604(b).

(20) ASTM D3311–92, Standard Specification for Drain, Waste, and Vent (DWV) Plastic Fittings Patterns, IBR approved for § 3280.604(b).

(21) ASTM D3953–97, Standard Specification for Strapping, Flat Steel, and Seals, approved April 10, 1997, IBR approved for §§ 3280.306(b) and 3280.306(g).

(22) ASTM D4442–92 (Reapproved 1997), Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials, IBR approved for § 3280.304(b).

(23) ASTM D4444-92, Standard Test Methods for Use and Calibration of Hand-Held Moisture Meters, IBR approved for § 3280.304(b).

(24) ASTM D4635–01, Standard Specification for Polyethylene Films Made from Low-Density Polyethylene for General Use and Packaging Applications, approved June 10, 2001, IBR approved for § 3280.611(d).

(25) ASTM E84–01, Standard Test Method for Surface Burning Characteristics of Building Materials, 2001, IBR approved for § 3280.203(a).

(26) ASTM E 96–95 Standard Test Methods for Water Vapor Transmission of Materials, IBR approved for § 3280.504(a).

(27) ASTM E 162–94, Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source, IBR approved for § 3280.203(a).

(28) ASTM E 773–97, Standard Test Methods for Accelerated Weathering of Sealed Insulating Glass Units, IBR approved for § 3280.403(d).

(29) ASTM E 774–97, Standard Specification for the Classification of the Durability of Sealed Insulating Glass Units, IBR approved for § 3280.403(d).

(30) ASTM E 1333–96, Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates from Wood Products Using a Large Chamber, approved March 10, 1996, IBR approved for § 3280.406(b).

(31) ASTM F628–91, Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40, Plastic Drain, Waste, and Vent Pipe with a Cellular Core, IBR approved for § 3280.604(b).

(32) ASTM F876–10, Standard Specification for Crosslinked Polyethylene (PEX) Tubing, approved February 10, 2010, IBR approved for § 3280.604(b).

(33) ASTM F877–07, Standard Specification for Crosslinked Polyethylene (PEX) Plastic Hot- and Cold-Water Distribution Systems, approved February 1, 2007, IBR approved for § 3280.604(b).

(q) Cast Iron Soil Pipe Institute (CISPI), 1064 Delaware Avenue, SE, Atlanta, GA 30316, telephone number 404-622-0073, fax number 404-973-2845, website: <http://www.cispi.org/>.

(1) CISPI–301–90, Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications, IBR approved for § 3280.604(b) .

(2) CISPI–HSN–85, Specification for Neoprene Rubber Gaskets for HUB and Spigot Cast Iron Soil Pipe and Fittings, IBR approved for §§ 3280.604, 3280.611(d).

(r) FS—Federal Specifications, General Services Administration, Specifications Branch, Room 6039, GSA Building, 7th and D Streets, SW, Washington, DC 20407.

(1) FS WW–P–541E/GEN–1980, Plumbing Fixtures (General Specifications), IBR approved for § 3280.604(b)

(2) FS ZZ-R-765B-1970, Silicone Rubber, (with 1971 Amendment), IBR approved for § 3280.611(d).

(s) HPVA (previously HPMA)—Hardwood Plywood and Veneer Association (HPVA) (previously named Hardwood Plywood Manufacturers Association (HPMA), 1825 Michael Faraday Drive, Reston, VA 22090, telephone number 703-435-2900, fax number 703-435-2537, website: <http://www.hpva.org/>.

(1) ANSI/HPVA HP–1–1994 (Approved 1995), American National Standard for Hardwood and Decorative Plywood, IBR approved for § 3280.304(b).

(2) HP-SG–96, Structural Design Guide for Hardwood Plywood Wall Panels, revised 1996, IBR approved for § 3280.304(b).

(t) HUD User, 11491 Sunset Hills Road, Reston, VA 20190-5254.

(1) HUD User No. 0005945, Overall U-values and Heating/Cooling Loads—Manufactured Homes, February 1992. IBR approved for § 3280.508(b).

(2) [Reserved].

(u) IIT Research Institute (IITRI), 10 West 35th Street, Chicago, IL 60616, telephone number 312-567-4000, website: <http://www.iitri.org/>.

(1) IITRI Fire and Safety Research Project J-6461 “Development of Mobile Home Fire Test Methods to Judge the Fire-Safe Performance of Foam Plastic Sheathing and Cavity Insulation”, 1979, IBR approved for § 3280.207(a).

(2) [Reserved].

(v) International Association of Plumbing and Mechanical Officials (IAPMO), 4755 East Philadelphia Street, Ontario, CA 91716, telephone number 909-472-4100, fax number 909-472-4150, website: <http://www.iapmo.org>.

(1) IAPMO PS 2-89, Material and Property Standard for Cast Brass and Tubing P-Traps, IBR approved for § 3280.604(b).

(2) IAPMO PS 4-90, Material and Property Standard for Drains for Prefabricated and Precast Showers, IBR approved for § 3280.604(b).

(3) IAPMO PS 5-84, Material and Property Standard for Special Cast Iron Fittings, IBR approved for § 3280.604(b).

(4) IAPMO PS 9-84, Material and Property Standard for Diversion Tees and Twin Waste Elbow, IBR approved for § 3280.604(b).

(5) IAPMO PS 14-89, Material and Property Standard for Flexible Metallic Water Connectors, IBR approved for § 3280.604(b).

(6) IAPMO PS 23-89, Material and Property Standard for Dishwasher Drain Airgaps, IBR approved for § 3280.604(b).

(7) IAPMO PS 31-91, Material and Property Standards for Backflow Prevention Assemblies, IBR approved for § 3280.604(b).



(8) IAPMO TSC 9–97, Standard for Gas Supply Connectors for Manufactured Homes, IBR approved for § 3280.703.

(9) IAPMO TSC 22–85, Standard for Porcelain Enameled Formed Steel Plumbing Fixtures, IBR approved for § 3280.604(b).

(w) Military Specifications and Standards, Naval Publications and Forms Center (MIL), 5801 Tabor Avenue, Philadelphia, PA 19120.

(1) MIL-L-10547E-1975, Liners, Case, and Sheet, Overwrap; Water-Vapor Proof or Waterproof, Flexible, IBR approved for § 3280.611(d).

(2) [Reserved].

(x) National Electrical Manufacturers Association (NEMA), 1300 North 17th Street, Suite 1752, Arlington, VA 22209, telephone number 703-841-3200, fax number 703-841-5900, website: <http://www.nema.org/Pages/default.aspx>.

(1) ANSI/NEMA WD–6–1997 Wiring Devices–Dimensional Specifications, IBR approved for § 3280.803(f).

(2) [Reserved].

(y) International Code Council Evaluation Service (NER), (previously known as National Evaluation Service), 5360 Workman Mill Road, Whittier, CA 90601-0543, telephone number 1-800-423-6587, ext. 66546, fax number 562-695-4694, website: <http://www.icc-es.org>.

(1) NER–272, National Evaluation Report, Power Driven Staples, Nails, and Allied Fasteners for Use in All Types of Building Construction, Reissued September 1, 1997, IBR approved for § 3280.304(b).

(2) [Reserved].

(z) National Fenestration Rating Council (NFRC), 6305 Ivy Lane, Suite 140, Greenbelt, MD 20770, telephone number 301-589-1776, fax number 301-589-3884, website:

<http://www.nfrc.org>.

(1) NFRC 100, Procedure for Determining Fenestration Product U-factors, 1997 Edition, IBR approved for § 3280.508(e).

(2) [Reserved].

(aa) National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02269, phone number 617-770-3000, fax number 617-770-0700, website: <http://www.nfpa.org>.

(1) NFPA 31, Standard for the Installation of Oil Burning Equipment, 2001, IBR approved for §§ 3280.703 and 3280.707(f).

(2) NFPA 54–2002, National Fuel Gas Code, IBR approved for § 3280.703.

(3) NFPA 58, Liquefied Petroleum Gas Code, 2001 Edition, IBR approved for §§ 3280.703 and 3280.704(b).

(4) NFPA No. 70–2005, National Electrical Code, IBR approved as follows:

(i) Article 110.22, IBR approved for §§ 3280.803(k) and 3280.804(k).

(ii) Article 210.12(A) and (B), IBR approved for § 3280.801(b).

(iii) Article 220.61, IBR approved for § 3280.811(b).

(iv) Article 230, IBR approved for §§ 3280.803(k) and 3280.804(k).

(v) Article 250.24, IBR approved for §§ 3280.803(k) and 3280.804(k).

(vi) Article 250.26, IBR approved for §§ 3280.803(k) and 3280.804(k).

(vii) Article 250.28, IBR approved for §§ 3280.803(k) and 3280.804(k).

(viii) Article 312.2(A), IBR approved for §§ 3280.803(k) and 3280.804(k).

(x) Table 314.16(A), IBR approved for §§ 3280.808(m) and 3280.808(q).

- (ix) Article 314.23(B), IBR approved for §§ 3280.808(m) and 3280.808(q).
- (xi) Article 406.3, IBR approved for § 3280.807(d).
- (xii) Article 410.4(D), IBR approved for § 3280.805(a).
- (xiii) Article 440, IBR approved for § 3280.805(a).
- (xiv) Article 440.65, IBR approved for § 3280.801(b).
- (xv) Part II of Article 550, IBR approved for §§ 3280.801(a) and 3280.801(b).
- (xvi) Article 550.25(a), IBR approved for § 3280.801(b).
- (xvii) Article 680.70, IBR approved for §§ 3280.607(c) and 3280.801(a).
- (xviii) Article 680.71, IBR approved for §§ 3280.607(c) and 3280.801(a).
- (xix) Articles 680.72, IBR approved for §§ 3280.607(c) and 3280.801(a).
- (5) NFPA 90B, Warm Air Heating and Air Conditioning Systems, 1996 Edition, IBR approved for § 3280.703.
- (6) NFPA 220, Standard on Types of Building Construction, Chapter 2: definitions of “limited combustible” and “noncombustible material”, 1995 Edition , IBR approved for § 3280.202.
- (7) NFPA 253, Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source, 2000, IBR approved for § 3280.207(c).
- (8) NFPA 255, Standard Method of Test of Surface Burning Characteristics of Building Materials, 1996, IBR approved for §§ 3280.203(a) and 3280.207(a).
- (bb) U.S. Department of Commerce, National Institute of Standards and Technology (NIST), Office of Engineering Standards, Room A-166, Technical Building, Washington, DC 20234 and Voluntary Product Division, 100 Bureau Drive, Stop 2100, Gaithersburg, MD 20899-

2100, telephone number 301- 975-4000, fax number 301- 975-4715, website:

<http://www.nist.gov>.

(1) PS 1–95, Construction and Industrial Plywood (With Typical APA Trademarks), IBR approved for § 3280.304(b).

(2) Voluntary Product Standard PS 2-04, Performance Standard for Wood-Based Structural-Use Panels, December 2004, IBR approval for § 3280.304(b).

(cc) National Sanitation Foundation (NSF), 789 North Dixboro Road, Ann Arbor, MI 48105, telephone number 734-769-8010, fax number 734-769-0109, website:

<http://www.nsf.org>.

(1) ANSI/NSF 14–1990, Plastic Piping Components and Related Materials, IBR approved for § 3280.604(b).

(2) ANSI/NSF 24–1988, Plumbing System Components for Manufactured Homes and Recreational Vehicles, IBR approved for § 3280.604(b).

(3) ANSI/NSF 61–2001, Drinking Water System Components–Health Effects, IBR approved for § 3280.604(b).

(dd) Resources, Applications, Designs, & Controls (RADCO), 3220 East 59<sup>th</sup> Street, Long Beach, CA 90805, telephone number 562-272-7231, fax number 562-529-7513, website:

<http://www.radcoinc.com>.

(1) RADCO DS-010–91, Decorative Gas Appliances for Installation in Solid Fuel Burning Fireplaces, May 1991, IBR approved for § 3280.703.

(2) [Reserved].

(ee) Society of Automotive Engineers (SAE), 400 Commonwealth Drive, Warrendale, PA 15096, telephone number 724-776-0790, website: <http://www.sae.org/>.

(1) SAE–J533b–1992, Flares for Tubing, IBR approved for §§ 3280.703 and 3280.705(f).

(2) [Reserved].

(ff) Steel Joist Institute (SJI), 234 West Cheves Street, Florence, SC 29501, telephone number 843-407-4091, website: <http://steeljoist.org>.

(1) Standard Specifications Load Tables and Weight Tables for Steel Joists and Joist Girders, SJI 1994, Fortieth Edition, IBR approved for § 3280.304(b).

(2) [Reserved].

(gg) Truss Plate Institute (TPI), 218 North Lee Street, Suite 312, Alexandria, VA 22314, telephone number 703-683-1010, fax number 866-501-4012, website: <http://www.tpinst.org/index.html>.

(1) TPI-85, Design Specifications for Metal Plate and Wood Connected Trusses, IBR approved for § 3280.304(b).

(2) [Reserved].

(hh) Underwriters' Laboratories, Inc. (UL), 333 Pfingsten Road, Northbrook, IL 60062, telephone number 847-272-8800, fax number 847-509-6257, website: <http://www.ul.com>.

(1) UL 94–1996, with 2001 revisions, Test for Flammability of Plastic Materials for Parts in Devices and Appliances, Fifth Edition, IBR approved for § 3280.715(e).

(2) UL 103–1995, with 1999 revisions, Factory-Built Chimneys for Residential Type and Building Heating Appliances, Ninth Edition, IBR approved for § 3280.703.

(3) UL 109–1997, with 2001 revisions, Tube Fittings for Flammable and Combustible Fluids, Refrigeration Service, and Marine Use, Sixth Edition, IBR approved for § 3280.703.

(4) UL 127–1996, with 1999 revisions, Factory-Built Fireplaces, Seventh Edition, IBR approved for § 3280.703.

(5) UL 174–1996, with 1997 revisions, Household Electric Storage Tank Water Heaters, Tenth Edition, IBR approved for § 3280.703.

(6) UL 181 Factory-Made Air Ducts and Air Connectors, Ninth Edition, April 4, 1996, with revisions through May 15, 2003, IBR approved for §§ 3280.702, 3280.703 and 3280.715(a).

(7) UL 181A, 1994, with 1998 revisions, Standard for Safety Closure Systems for use with Rigid Air Ducts and Air Connectors, Second Edition, IBR approved for §§ 3280.703 and 3280.715(c).

(8) UL 181B, 1995, with 1998 revisions, Standard for Safety Closure Systems for use with Flexible Air Ducts and Air Connectors, First Edition, IBR approved for §§ 3280.703 and 3280.715(c).

(9) UL 217, Single and Multiple Station Smoke Alarms, Fifth Edition, dated January 4, 1999, IBR approved for § 3280.208(a).

(10) UL 268, Smoke Detectors for Fire Protective Signaling Systems, Fourth Edition, dated January 4, 1999, IBR approved for § 3280.208(a).

(11) UL 307A–1995, Liquid Fuel-Burning Heating Appliances for Manufactured Homes and Recreational Vehicles, Seventh Edition, with 1997 revisions, IBR approved for §§ 3280.703 and 3280.707(f).

(12) UL 307B–1995, Gas Burning Heating Appliances for Manufactured Homes and Recreational Vehicles, Fourth Edition, with 1998 revisions, IBR approved for § 3280.703.

(13) UL 311, 1994, with 1998 revisions, Roof Jacks for Manufactured Homes and Recreational Vehicles, Eighth Edition, IBR approved for § 3280.703.

(14) UL 441, 1996 with 1999 revisions, Gas Vents, Ninth Edition, IBR approved for § 3280.703.

(15) UL 569, 1995 with 2001 revisions, Pigtails and Flexible Hose Connectors for LP-Gas, Seventh Edition, IBR approved for §§ 3280.703 and 3280.705(k).

(16) UL 737, 1996, Fireplace Stoves, Eight Edition, with 2000 revisions, IBR approved for § 3280.703.

(17) UL 923 Microwave Cooking Appliances, Fifth Edition, May 23, 2002, IBR approved for § 3280.204(c).

(18) UL 1042–1994, Electric Baseboard Heating Equipment, Fourth Edition, with 1998 revisions, IBR approved for § 3280.703.

(19) UL 1096, 1986, Electric Central Air Heating Equipment, Fourth Edition with revisions July 16, 1986, and January 30, 1988, IBR approved for § 3280.703.

(20) UL 1482, 1996, with 2000 revisions, Solid-Fuel Type Room Heaters, Fifth Edition, IBR approved for § 3280.703.

(21) UL 1995, 1995, Heating and Cooling Equipment, Second Edition, with 1999 revisions, IBR approved for § 3280.703.

(22) UL 2021–1997. Fixed and Location-Dedicated Electric Room Heaters, Second Edition, with 1998 revisions, IBR approved for § 3280.703.

(ii) Underwriters' Laboratories of Canada (ULC), 7 Underwriters Road, Toronto, Ontario, Canada M1 R 3A9, telephone number 866-937-3852, fax number 416-757-8727, website: <http://www.ul.com/canada/eng/pages/>.

(1) CAN/ULC S102.2-M88, Standard Method of Test for Surface Burning Characteristics of Floor Coverings and Miscellaneous Materials and Assemblies, Fourth Edition, April 1988, IBR approved for § 3280.207(b).

(2) [Reserved].

(jj) Window and Door Manufacturers Association (WDMA) (Previously known as the National Wood Window and Door Association, (NWWDA)), 2025 M Street, NW, Suite 800, Washington, DC 20036-3309, telephone number 202-367-1157, website:

<https://www.wdma.com>.

(1) NWWDA I.S.4–81, Water Repellent Preservative Non-Pressure Treatment for Millwork, IBR approved for § 3280.405(b).

(2) [Reserved].

3. In § 3280.105, revise paragraphs (a)(2)(iv) and (b)(2) to read as follows:

**§ 3280.105 Exit facilities; exterior doors.**

(a) \* \* \*

(2) \* \* \*

(iv) One of the required exit doors must be accessible from the doorway of each bedroom without traveling more than 35 feet. The travel distance to the exit door must be measured on the floor or other walking surface along the center-line of the natural and unobstructed path of travel starting at the center of the bedroom door, curving around any corners or permanent obstructions with a one-foot clearance from, and ending at, the center of the exit door.

(b) \* \* \*

(2) All exterior swinging doors must provide a minimum 28-inch wide x 74-inch high clear opening. Door seals are permitted to reduce the opening, either vertically or horizontally, a maximum of one inch. All exterior sliding glass doors must provide a minimum 28-inch wide x 72-inch high clear opening.



\* \* \* \* \*

4. Revise § 3280.111 to read as follows:

**§ 3280.111 Toilet compartments.**

Each toilet compartment must have a minimum width of 30 inches, with a minimum clear space of 21 inches in front of each toilet. A toilet located adjacent to a wall must have the center-line of the toilet located a minimum of 15 inches from the wall. A toilet located adjacent to a tub must have the center-line of the toilet located a minimum of 12 inches from the outside edge of the tub.

5. Amend § 3280.113 by revising paragraph (b) and adding paragraphs (c) and (d) to read as follows:

**§ 3280.113 Glass and glazed openings.**

\* \* \* \* \*

(b) Hazardous locations requiring safety glazing. Except as provided in paragraph (d) of this section, the following locations and areas require the use of safety glazing conforming to the requirements of paragraph (c) of this section:

- (1) Glazing in all entrance or exit doors;
- (2) Glazing in fixed and sliding panels of sliding glass doors;
- (3) Glazing in storm-type doors;
- (4) Glazing in unframed side-hinged swinging doors;
- (5) Glazing in doors and fixed panels less than 60 inches above the room floor level that enclose bathtubs, showers, hydromassage tubs, hot tubs, whirlpools, saunas;

(6) Glazing within 12 inches horizontally, as measured from the edge of the door in the closed position, and 60 inches vertically as measured from the room floor level, adjacent to and in the same plane of a door;

(7) Glazing within 36 inches of an interior room walking surface when the glazing meets all of the following:

- (i) Individual glazed panels exceed 9 square feet in area in an exposed surface area;
- (ii) The bottom edge of the exposed glazing is less than 19 inches above the room floor level; and
- (iii) The top edge of the exposed glazing is greater than 36 inches above the room floor level.

(8) Glazing in rails and guardrails; and

(9) Glazing in unbacked mirrored wardrobe doors (i.e., mirrors that are not secured to a backing that is capable of being the door itself).

(c) Safety glazing material is considered to be any glazing material capable of meeting the requirements of Consumer Product Safety Commission 16 CFR part 1201, or Standard for Safety Glazing Materials used in Buildings —Safety Performance Specifications and Methods of Test, ANSI Z97.1-2004 (incorporated by reference, see § 3280.4).

(d) Glazing in the following locations is not required to meet the requirements in paragraph (b) of this section:

- (1) Openings in doors through which a 3-inch sphere is unable to pass;
- (2) Leaded and decorative glazed panels;
- (3) Glazing in jalousie-type doors;

(4) Glazing as described in paragraph (b)(6) of this section when an intervening wall or other permanent barrier exists between the door and the glazing;

(5) Glazing as described in paragraph (b)(7) of this section when a protective bar or member is installed horizontally between 34 inches and 38 inches above the room floor level, as long as the bar or member is a minimum of 1-1/2 inches in height and capable of resisting a horizontal load of 50 pounds per lineal foot; and

(6) Mirrors mounted on a flush door surface or solid wall surface.

6. In § 3280.204, revise paragraph (c) to read as follows:

**§ 3280.204 Kitchen cabinet protection.**

\* \* \* \* \*

(c) Alternative compliance. When all exposed surfaces along the bottoms and sides of combustible kitchen cabinets are protected as described in paragraph (a) of this section, the metal hood, the 5/16-inch thick gypsum board or equivalent material, and the 3/8-inch airspace required by paragraph (a) of this section can be omitted, provided that:

(1) A microwave oven is installed between the cabinet and the range; and

(2) The microwave oven is equivalent in fire protection to the metal range hood required by paragraph (a) of this section; and

(3) The microwave oven is certified to be in conformance with Microwave Cooking Appliances, UL 923-2002 (incorporated by reference, see § 3280.4).

\* \* \* \* \*

§§ 3280.207 through 3280.209 [Redesignated as §§ 3280.208 through 3280.210]

7. Redesignate §§ 3280.207 through 3280.209 as §§ 3280.208 through 3280.210, respectively.

8. Add a new § 3280.207 to read as follows:

**§ 3280.207 Requirements for thermal insulating materials.**

(a) General. Except for foam plastic materials and as provided in this section, exposed and concealed thermal insulating materials, including any facings, must be tested in accordance with NFPA 255-96, Standard Method of Test of Surface Burning Characteristics of Building Materials (incorporated by reference, see § 3280.4) and must have a flame spread index of 25 or less and a smoke developed index of 450 or less. The flame spread and smoke developed limitations do not apply to:

(1) Coverings and facings of insulation batts or blankets installed in concealed spaces when the facings are in substantial contact with the unexposed surface of wall, floor, or ceiling finish; or

(2) Cellulose loose-fill insulation that complies with paragraph (b) of this section.

(b) Loose-fill insulation. (1) Cellulose loose-fill insulation that is not spray-applied or self-supporting must comply with, and each package must be labeled in accordance with the Consumer Product Safety Commission requirements in 16 CFR parts 1209 and 1404.

(2) Other loose-fill insulation that cannot be mounted in the NFPA 255-96, test apparatus without a screen or other artificial support must be tested in accordance with CAN/ULC S102.2-M88, Standard Method of Test for Surface Burning Characteristics of Floor Coverings and Miscellaneous Materials and Assemblies (incorporated by reference, see § 3280.4), and must have a flame spread index of 25 or less and a smoke developed index of 450 or less.

(c) Attic locations. Exposed insulation installed on the floor or ceiling forming the lower boundary of the attic must be tested in accordance with NFPA 253-2000, Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source

(incorporated by reference, see § 3280.4) and must have a critical radiant flux of not less than 0.12 watt/cm<sup>2</sup>.

9. Revise § 3280.301 to read as follows:

**§ 3280.301 Scope.**

This subpart covers the minimum requirements for materials, products, equipment, and workmanship needed to assure that the manufactured home will provide the following:

- (a) Structural strength and rigidity;
- (b) Protection against corrosion, decay, insects, rodents, and other similar destructive forces;
- (c) Protection against wind hazards;
- (d) Resistance to the elements; and
- (e) Durability and economy of maintenance.

10. Amend § 3280.304(b)(1) as follows:

a. In the list under the undesignated heading “Wood and Wood Products,” revise the references to “Design and Fabrication of Glued Plywood-Lumber Beams,” “Design and Fabrication of Plywood Sandwich Panels,” “Design and Fabrication of Plywood Stressed Skin Panels,” and “Wood Structural Design Data;”

b. In the list under the undesignated heading “Wood and Wood Products,” remove the reference to “Voluntary Product Standards, Performance Standard for Wood-Based Structural Use Panels,” and add in its place a reference to “Performance Standards for Wood-Based Structural Use Panels;”

c. In the list under the undesignated heading “Wood and Wood Products,” add new reference standards for “Engineered Wood Construction Guide” and for “Medium Density Fiberboard (MDF),” immediately preceding the undesignated heading “Other”; and

d. In the list under the undesignated heading “Unclassified,” remove the reference to “Safety Performance Specifications and Methods of Test for Safety Glazing Materials Used in Buildings —ANSI/Z-97.1-1984,” and add in its place a reference to “Standard for Safety Glazing Materials used in Buildings —Safety Performance Specifications and Methods of Test, ANSI Z97.1-2004 (incorporated by reference, see § 3280.4).”

The revisions and additions to read as follows:

**§ 3280.304 Materials.**

\* \* \* \*

(b)(1) \* \*

Wood and Wood Products

\* \* \* \*

Design and Fabrication of Glued Plywood-Lumber Beams, Supplement # 2—  
APA S 812R, 1992 (incorporated by reference, see § 3280.4).

\* \* \* \*

Design and Fabrication of Plywood Sandwich Panels, Supplement #4—APA U 814H,  
1990 (incorporated by reference, see § 3280.4).

Performance Standard for Wood-Based Structural Use Panels—NIST PS 2-04, 2004  
(incorporated by reference, see § 3280.4).

Design and Fabrication of Plywood Stressed-Skin Panels, Supplement 3—APA-U 813L,  
1992 (incorporated by reference, see § 3280.4).

\* \* \* \*

Wood Structural Design Data, 1986 Edition with 1992 Revisions, AFPA.

\* \* \* \*

Engineered Wood Construction Guide—APA E30R 2001 (incorporated by reference, see § 3280.4).

Medium Density Fiberboard (MDF) For Interior Applications—ANSI A208.2-2002 (incorporated by reference, see § 3280.4).

\* \* \* \*

Unclassified

\* \* \* \*

Standard for Safety Glazing Materials used in Buildings —Safety Performance Specifications and Methods of Test, ANSI Z97.1-2004 (incorporated by reference, see § 3280.4).

\* \* \* \*

11. In § 3280.305, revise paragraphs (c)(1)(i), (c)(2)(iv), and (c)(3)(ii) to read as follows:

**§ 3280.305 Structural design requirements.**

\* \* \* \*

(c) \* \* \*

(1) \* \* \*

(i) Standard wind loads (Zone I). When a manufactured home is not designed to resist the wind loads for high-wind areas (Zone II or Zone III) specified in paragraph (c)(1)(ii) of this section, the manufactured home and each of its wind-resisting parts and portions must be designed for horizontal wind loads of not less than 15 psf and a net uplift roof load of not less

than 9 psf. The net uplift roof load must not be reduced by the dead load of the roof structure for the purposes of engineering design or structural load testing.

\* \* \* \* \*

(2) \* \* \*

(iv) Consideration of local requirements. For areas where wind mapping data or records or the requirements of the State or local authority indicate wind speeds in excess of those identified in this section, the Department may establish, through rulemaking, more stringent requirements for manufactured homes to be installed in such areas.

(3) \* \* \*

(ii) Consideration of local requirements. For exposures in areas (mountainous or other) where recognized snow records, wind records, or the requirements of the State or local authority indicate significant differences from the loads stated in this paragraph (c)(3), the Department may establish, through rulemaking, more stringent requirements for manufactured homes to be installed in such areas. For snow loads, such requirements must be based on a roof snow load of 0.6 of the ground snow load for areas exposed to wind and a roof snow load of 0.8 of the ground snow load for sheltered areas.

\* \* \* \* \*

12. In § 3280.306, revise paragraphs (b)(2)(v) and (g)(2) to read as follows:

**§ 3280.306 Windstorm protection.**

\* \* \* \* \*

(b) \* \* \*

(2) \* \* \*



(v) That anchoring equipment should be certified by a registered professional engineer or architect to resist these specified forces in accordance with testing procedures in ASTM D3953-97, Standard Specification for Strapping, Flat Steel and Seals (incorporated by reference, see § 3280.4).

\* \* \* \* \*

(g) \* \* \*

(2) Type 1, Finish B, Grade 1 steel strapping, 1-1/4 inches wide and 0.035 inches in thickness, certified by a registered professional engineer or architect as conforming with ASTM D3953-97, Standard Specification for Strapping, Flat Steel and Seals (incorporated by reference, see § 3280.4).

**13.** In § 3280.403, revise the section heading and paragraph (a), redesignate paragraph (b) as (b)(1), add paragraph (b)(2), revise paragraphs (c) and (d)(1), and add paragraph (e)(3) to read as follows:

**§ 3280.403 Requirements for windows, sliding glass doors, and skylights.**

(a) Scope. This section establishes the requirements for prime windows and sliding glass doors, except that windows used in an entry door are components of the door and are excluded from these requirements.

(b) \* \* \*

(2) All skylights must comply with AAMA/WDMA/CSA/101/I.S.2/A440-08: North American Fenestration Standard/Specifications for Windows, Doors and Skylights (incorporated by reference, see § 3280.4). Skylights must withstand the roof loads for the applicable Roof Load Zone specified in § 3280.305(c)(3), and the following wind loads:

- (i) For Wind Zone I, the wind loads specified in § 3280.305(c)(1)(i); and
- (ii) For Wind Zones II and III, the wind loads specified for exterior roof coverings, sheathing, and fastenings in § 3280.305(c)(1)(ii).

(c) Installation. All primary windows, sliding glass doors, and skylights must be installed in a manner that allows proper operation and provides protection against the elements, as required by § 3280.307.

(d) \* \* \*

(1) Safety glazing materials, where used shall meet Standard for Safety Glazing Materials used in Buildings —Safety Performance Specifications and Methods of Test, ANSI Z97.1-2004 (incorporated by reference, see § 3280.4).

\* \* \* \* \*

(e) \* \* \*

(3) All skylights installed in manufactured homes must be certified as complying with AAMA/WDMA/CSA 101/I.S.2/A440-08: North American Fenestration Standard/Specifications for Windows, Doors, and Skylights (incorporated by reference, see § 3280.4). This certification must be based on applicable loads specified in paragraph (b) of this section.

\* \* \* \* \*

**14.** In § 3280.404, revise paragraph (c)(2) and add paragraph (c)(3) to read as follows:

**§ 3280.404 Standard for egress windows and devices for use in manufactured homes.**

\* \* \* \* \*

(c) \* \* \*

(2) An operational check of each installed egress window or device must be made at the manufactured home factory. All egress windows and devices must be capable of being opened to the minimum required dimensions by normal operation of the window without binding or requiring the use of tools. Any window or device failing this check must be repaired or replaced. A repaired window must conform to its certification. Any repaired or replaced window or device must pass the operational check.

(3) Windows that require the removal of the sash to meet egress size requirements are prohibited.

\* \* \* \* \*

**15.** Amend § 3280.504 as follows:

a. Add “(incorporated by reference, see § 3280.4)” immediately following “Materials)” in paragraph (a)(1).

b. Redesignate paragraph (c) as paragraph (d) and add new paragraph (c).

The addition reads as follows:

**§ 3280.504 Condensation control and installation of vapor retarders.**

\* \* \* \* \*

(c) Liquid applied vapor retarders. Each liquid applied vapor retarder must be tested by a nationally recognized testing agency for use on the specific substrate to which it is applied. The test report must include the perm rating, as measured by ASTM E 96-95, Standard Test Methods for Water Vapor Transmission of Materials, and associated application rate for each specific substrate.

\* \* \* \* \*

**16.** In § 3280.509, revise paragraph (c) to read as follows:

(c) Insulation compression. Insulation compressed to less than nominal thickness and loose-fill insulation in sloping cavities must have its nominal R-values reduced in compressed areas in accordance with the following table:

**TABLE to paragraph (c)**

<b>Effect of Insulation Compression and Restriction on R-Values</b>							
<b>Original Thickness</b>	<b>Non-uniform (a) Restriction</b>		<b>Uniform (b) Compression Batt</b>	<b>Original Thickness</b>	<b>Non-uniform (a) Restriction</b>		<b>Uniform (b) Compression Batt</b>
	<b>Batt</b>	<b>Blown</b>			<b>Batt</b>	<b>Blown</b>	
0%	20%	15%	0%				
1%	26%	21%	1%	51%	81%	73%	62%
2%	32%	25%	2%	52%	81%	73%	63%
3%	36%	28%	4%	53%	82%	74%	64%
4%	38%	30%	5%	54%	82%	75%	65%
5%	41%	32%	7%	55%	83%	75%	65%
6%	43%	33%	8%	56%	83%	76%	66%
7%	45%	35%	10%	57%	84%	76%	67%
8%	46%	36%	11%	58%	84%	77%	68%
9%	48%	38%	13%	59%	84%	78%	69%
10%	49%	39%	14%	60%	85%	78%	70%
11%	51%	40%	15%	61%	85%	79%	71%
12%	52%	42%	17%	62%	86%	79%	72%
13%	53%	43%	18%	63%	86%	80%	73%
14%	54%	44%	20%	64%	87%	81%	74%
15%	55%	45%	21%	65%	87%	81%	74%
16%	57%	46%	22%	66%	88%	82%	75%
17%	58%	47%	24%	67%	88%	82%	76%
18%	59%	48%	25%	68%	88%	83%	77%
19%	59%	49%	26%	69%	89%	84%	78%
20%	60%	50%	28%	70%	89%	84%	78%
21%	61%	51%	29%	71%	90%	85%	79%
22%	62%	52%	30%	72%	90%	85%	80%
23%	63%	52%	31%	73%	90%	86%	81%
24%	64%	53%	33%	74%	91%	86%	82%
25%	65%	54%	34%	75%	91%	87%	82%
26%	65%	55%	35%	76%	92%	87%	83%
27%	66%	56%	36%	77%	92%	88%	84%
28%	67%	57%	37%	78%	92%	89%	85%
29%	68%	57%	39%	79%	93%	89%	85%
30%	68%	58%	40%	80%	93%	90%	86%
31%	69%	59%	41%	81%	93%	90%	87%
32%	70%	60%	42%	82%	94%	91%	88%
33%	70%	60%	43%	83%	94%	91%	88%
34%	71%	61%	44%	84%	95%	92%	89%
35%	72%	62%	45%	85%	95%	92%	90%
36%	72%	63%	47%	86%	95%	93%	91%
37%	73%	63%	48%	87%	96%	93%	91%
38%	74%	64%	49%	88%	96%	94%	92%
39%	74%	65%	50%	89%	96%	94%	93%
40%	75%	65%	51%	90%	97%	95%	93%

41%	75%	66%	52%	91%	97%	95%	94%
42%	76%	67%	53%	92%	97%	96%	95%
43%	76%	68%	54%	93%	98%	96%	95%
44%	77%	68%	55%	94%	98%	97%	96%
45%	78%	69%	56%	95%	98%	97%	97%
46%	78%	70%	57%	96%	99%	98%	97%
47%	79%	70%	58%	97%	99%	98%	98%
48%	79%	71%	59%	98%	99%	99%	99%
49%	80%	71%	60%	99%	100%	99%	99%
50%	80%	72%	61%	100%	100%	100%	100%

Note: To use this table, first compute the restricted insulation thickness as a fraction of the uncompressed (full) insulation thickness. Then look up the *R*-value remaining from the appropriate column (Non-uniform Restriction, Batt Non-uniform Restriction, Blown or Uniform Compression, Batt). Example: Assume a section of loose-fill ceiling insulation went from *R*-25 insulation at a height of 10 inches to a minimum height of 2 inches at the edge of the ceiling. The ratio of minimum to full thickness is 0.20 (2 divided by 10). Look up 0.20 (20 percent), read across to column 3 (Non-uniform Restriction, Blown), and read 50 percent. Therefore, the *R*-value of the loose-fill insulation over the restricted area would be *R*-12.5 (50 percent of 25).

- (a) Non-uniform restriction is that which occurs between non-parallel planes, such as in the ceiling near the eaves.
- (b) Uniform compression is compression between parallel planes, such as that which occurs in a wall.

\* \* \* \*

17. In § 3280.602, remove the definition for *Anti-siphon trap vent device* and add a definition for *Mechanical trap vent device* in alphabetical order, to read as follows:

**§ 3280.602 Definitions.**

\* \* \* \*

*Mechanical trap vent device* means a device that automatically opens to admit air to a fixture drain above the connection of the trap arm so as to prevent siphonage, and closes tightly when the pressure within the drainage system is equal to or greater than atmospheric pressure, so as to prevent the escape of gases from the drainage system into the manufactured home.

\* \* \* \*

18. In § 3280.603, revise paragraphs (a)(2), (b)(4)(ii), and (b)(4)(iii) to read as follows:

**§ 3280.603 General requirements.**

(a) \* \* \*

(2) Conservation. Each water closet must not use more than 1.6 gallons of water per flush.

\* \* \* \* \*

(b) \* \* \*

(4) \* \* \*

(ii) A statement in the installation instructions required by § 3280.306(b), stating that if the heat tape or pipe heating cable is used, it must be listed for use with manufactured homes.

(iii) A receptacle outlet complying with § 3280.806(d)(10).

\* \* \* \* \*

**19.** Amend § 3280.604(b)(2) as follows:

a. In the list under the undesignated heading “Plastic Pipe and Fittings”, add reference standards for “Standard Specification for Crosslinked Polyethylene (PEX) Tubing” and “Standard Specification for Crosslinked Polyethylene (PEX) Plastic Hot- and Cold-Water Distribution Systems,” immediately before the undesignated heading “Miscellaneous”;

b. In the list under the undesignated heading “Miscellaneous”, revise the reference standard for “Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings” and “Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems”;

c. In the undesignated heading “Plumbing Fixtures”, revise the reference standard for “Safety Performance Specifications and Methods of Test for Safety Glazing Materials Used in Buildings”; and

d. In the undesignated heading “Plumbing Fixtures”, add a reference standard for “Performance Requirements for Automatic Compensating Valves for Individual Shower and Tub/Shower Combinations” at the end of the list.

The revisions and additions to read as follows:

**§ 3280.604 Materials.**

\* \* \* \*

(b) \* \*

(2) \* \*

Plastic Pipe and Fittings

\* \* \*

Standard Specification for Crosslinked Polyethylene (PEX) Tubing—ASTM F876-10  
(incorporated by reference, see § 3280.4).

Standard Specification for Crosslinked Polyethylene (PEX) Plastic Hot- and Cold-Water  
Distribution Systems—ASTM F877-07 (incorporated by reference, see § 3280.4).

Miscellaneous

\* \* \*

Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings, ASTM  
C564-97 (incorporated by reference, see § 3280.4).

\* \* \*

Relief Valves for Hot Water Supply Systems, ANSI Z21.22-1999 (incorporated by  
reference, see § 3280.4).

\* \* \*

Standard for Safety Glazing Materials used in Buildings —Safety Performance

Specifications and Methods of Test, ANSI Z97.1-2004 (incorporated by reference, see § 3280.4).

\* \* \* \* \*

Plumbing Fixtures

\* \* \* \* \*

Performance Requirements for Automatic Compensating Values for Individual Shower and Tub/Shower Combinations, approved January 2005 ASSE 1016-2005 (incorporated by reference, see § 3280.4).

**20.** Amend § 3280.605 as follows:

- a. Redesignate paragraphs (a)(1) through (7) as paragraphs (b) through (h);
- b. Redesignate paragraphs (i) and (ii) of newly redesignated paragraph (h) as paragraphs (h)(1) and (2); and
- c. Revise newly redesignated paragraph (h)(1) to read as follows:

**§ 3280.605 Joints and connections.**

\* \* \* \* \*

(h) \* \* \*

(1) Approved or listed hub-less pipe and fittings must be permitted to be joined with listed couplings or adapters, per the manufacturer's recommendations.

\* \* \* \* \*

**21.** In § 3280.606, revise paragraph (a)(2) to read as follows:

**§ 3280.606 Traps and cleanouts.**



(a) \* \* \*

(2) Combination Fixtures. For the purposes of drainage and ventilation requirements, a two- or three-compartment sink, up to three single sinks, or up to three lavatories may be connected to one “P” trap and considered as a single fixture, so long as the sinks and lavatories are in the same room, have waste outlets not more than 30 inches apart, and have flood level rims at the same level. The “P” trap must be installed at the center fixture when three such fixtures are installed.

\* \* \* \* \*

22. In § 3280.607, revise paragraphs (a)(3), (b)(2)(v), (b)(3)(iii), add paragraph (b)(3)(v), and revise paragraphs (b)(4)(i), (b)(5)(ii), and (c)(6)(i) through (iii) to read as follows:

**§ 3280.607 Plumbing fixtures.**

(a) \* \* \*

(3) Fixture Connections. Fixture tailpieces and continuous wastes in exposed or accessible locations must be of not less than No. 20 Brown and Sharpe gauge seamless drawn-brass tubing or other approved pipe or tubing materials. Inaccessible fixture connections must be constructed according to the requirements for drainage piping. The diameter of each fixture tailpiece, continuous waste, or waste and overflow must be not less than:

(i) 1-1/2 inches, for sinks of two or more compartments, dishwashers, clothes washing machines, laundry tubs, bathtubs, and showers; and

(ii) Not less than 1-1/4 inches for lavatories or single compartment sinks having a 2-inch maximum drain opening.

\* \* \* \* \*

(b) \* \* \*

(2) \* \* \*

(v) Floor Connection. Water closets must be securely bolted to an approved flange or other approved fitting that is secured to the floor by means of corrosion-resistant screws. The bolts must be of solid brass or other corrosion-resistant material and must not be less than 1/4 inch in diameter. A watertight seal must be made between the water closet and flange or other approved fitting by use of a gasket, sealing compound, or listed connector device.

(3) \* \* \*

(iii) Shower doors and tub and shower enclosures shall be constructed so as to be waterproof and, if glazed, glazing shall comply with the Standard for Safety Glazing Materials used in Buildings —Safety Performance Specifications and Methods of Test, ANSI Z97.1-2004 (incorporated by reference, see § 3280.4).

\* \* \* \*

(v) Shower, bathtub, and tub-shower combination valves must be balanced pressure, thermostatic, or combination mixing valves that conform to the requirements of ASSE 1016 – 2005, Performance Requirements for Automatic Compensating Valves for Individual Shower and Tub/Shower Combinations (incorporated by reference, see § 3280.4). Such valves must be equipped with handle position stops that are adjustable in accordance with the valve manufacturer's instructions to a maximum setting of 120°F.

(4) \* \* \*

(i) A dishwashing machine must discharge its waste through a fixed air gap installed above the machine, through a high loop as specified by the dishwashing machine manufacturer, or into an open standpipe receptor with a height greater than the washing compartment of the

machine. When a standpipe is used, it must be at least 18 inches, but not more than 30 inches, above the trap weir. The drain connections from the air gap or high loop are permitted to connect to an individual trap to a directional fitting installed in the sink tailpiece or to an opening provided on the inlet side of a food waste disposal unit.

\* \* \* \*

(5) \* \*

(ii) Standpipes must be either 1-1/2 inch diameter minimum nominal iron pipe size, 1-1/2 inch diameter nominal brass tubing of not less than No. 20 Brown and Sharp gauge, or 1-1/2 inch diameter approved plastic materials. Receptors must discharge into a vented trap or must be connected to a laundry tub appliance by means of an approved or listed directional fitting. Each standpipe must extend not less than 18 inches or more than 42 inches above its trap and must terminate in an accessible location no lower than the top of the clothes washing machine. A removable, tight-fitting cap or plug must be installed on the standpipe when the clothes washer is not provided.

\* \* \* \*

(c) \* \*

(6) Hydromassage bathtub—(i) Access panel. A door or panel of sufficient size must be installed to provide access to the pump for repair or replacement.

(ii) Piping drainage. The circulation pump must be accessibly located above the crown weir of the trap. The pump drain line must be properly sloped to drain the volute after fixture use.

(iii) Piping. Hydromassage bathtub circulation piping must be installed to be self-draining.

\* \* \* \* \*

23. In § 3280.609, revise paragraphs (b)(7) and (8) to read as follows:

**§ 3280.609 Water distribution systems.**

\* \* \* \* \*

(b) \* \* \*

(7) Hose bibbs. When provided, all exterior hose bibbs and laundry sink hose connections must be protected by a listed nonremovable backflow prevention device. This requirement is not applicable to hose connections provided for automatic washing machines with built-in backflow prevention or water heater drain valves.

(8) Flushometer tanks. Flushometer tanks must be equipped with an approved air gap or vacuum breaker assembly that is located above the flood-level rim above the fixture.

\* \* \* \* \*

24. In § 3280.610, revise paragraphs (b)(1) and (e) to read as follows:

**§ 3280.610 Drainage systems.**

\* \* \* \* \*

(b) \* \* \*

(1) Pipe. Drainage piping must be standard weight galvanized steel, brass, copper tube DWV, listed Scheduled 40 ABS plastic, listed Scheduled 40 PVC plastic, cast iron, or other listed or approved materials.

\* \* \* \* \*

(e) Size of drainage piping. Fixture drains must be sized as follows:

(1) Fixture drains serving a single lavatory must be a minimum of 1-1/4 inches in diameter.

(2) Fixture drains serving two or three fixtures must be a minimum of 1-1/2 inches in diameter.

(3) Fixture drains serving four or more fixtures that are individually vented must be a minimum of 2 inches in diameter.

(4) Fixture drains for water closets must be a minimum of 3 inches in diameter.

\* \* \* \* \*

**25.** In § 3280.611, revise paragraphs (b)(1), (d), and (f) to read as follows:

**§ 3280.611 Vents and venting.**

\* \* \* \* \*

(b) \* \* \*

(1) Pipe. Vent piping must be standard weight galvanized steel, brass, copper tube DWV, listed Scheduled 40 ABS plastic, listed Scheduled 40 PVC plastic, cast iron, or other listed or approved materials.

\* \* \* \* \*

(d) Mechanical Vents. Where mechanical vents are used as a secondary vent system for plumbing fixtures that are protected by traps, the mechanical vents must comply with paragraphs (d)(1) or (2) of this section.

(1) Spring-operated mechanical (anti-siphon) vents must comply with the following:

(i) No more than two fixtures individually protected by the spring-operated mechanical vent may be drained by a common 1-1/2 inch diameter drain.

(ii) The drain size for three or more fixtures individually protected by a spring-operated mechanical vent must be at least 2 inches in diameter.

(iii) Spring-operated mechanical vents are restricted to venting fixtures with 1-1/2 inch traps.

(iv) A spring-operated mechanical vent must be installed in a location that allows a free flow of air and is accessible for inspection, maintenance, and replacement. The sealing function must be at least 6 inches above the top of the trap arm.

(v) Materials for the spring-operated mechanical vents must be as follows:

(A) Cap and housing must be listed acrylonitrile-butadiene-styrene, DWV grade;

(B) Stem must be DWV grade nylon or acetal;

(C) Spring must be stainless steel wire, Type 302; and

(D) Sealing disc must be either:

(1) Neoprene, conforming to CISPI-HSN-85, Specification for Neoprene Rubber Gaskets for HUB and Spigot Cast Iron Soil Pipe and Fittings (incorporated by reference, see § 3280.4), and to ASTM C564-97, Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings (incorporated by reference, see § 3280.4); or

(2) Other material, conforming to ASTM C920-02, Standard Specification for Elastomeric Joint Sealants (incorporated by reference, see § 3280.4), and to ASTM D4635-01, Standard Specification for Polyethylene Films Made from Low-Density Polyethylene for General Use and Packaging Applications (incorporated by reference, see § 3280.4).

(2) Gravity-operated mechanical (air admittance valves) vents must comply with the following:

(i) Where installed to vent any fixture, the drain system must have a minimum 1-1/2 inch diameter vent that terminates outside the manufactured home.

(ii) Where gravity-operated mechanical vent devices terminate in the attic cavity, the following requirements must be met:

- (A) The attic cavity must be accessible;
- (B) The sealing device must be installed a minimum of 6 inches above the insulation materials; and
- (C) The attic must be vented in accordance with § 3280.504(c)(1)(i);
- (3) Mechanical vents must be installed in accordance with the vent manufacturer's instructions.

\* \* \* \* \*

(f) Vent terminal. Vents must terminate through the roof or wall, or to a mechanical vent device in accordance with paragraph (d) of this section.

(1) Roof extension. Each vent pipe must extend through its flashing and terminate vertically. Vents that extend through the roof must extend undiminished in size, not less than 2 inches above the roof. Vent openings must be at least 3 feet away from any motor-driven air intake that opens into any habitable area.

(2) Wall extensions. Extensions through exterior walls must terminate downward, have a screen to prevent entrance of birds and rodents, and be located as follows:

- (i) Extensions must not be located beneath a door, window, or other opening;
- (ii) Extensions must be a minimum of 10 feet above the finished floor;
- (iii) Extensions must be located a minimum of 2 feet above any building opening that is within 10 feet horizontally of any extension; and
- (iv) Extensions must not terminate under an overhang with soffit vents.

(3) Flashing. The opening around each vent pipe shall be made watertight by an adequate flashing or flashing material.

\* \* \* \* \*

**26.** In § 3280.702:

- a. Revise the definitions of “Class 0 air ducts,” and “Class 1 air ducts”;
- b. Remove the definition of “Class 2 air ducts”;
- c. Add in alphabetical order definitions of “Combination space heating and water heating appliance,” “Direct-vent system,” and “Direct-vent system appliance”;
- d. Remove the definition of “Energy efficiency ratio (EER)”;
- e. Revise the definitions of “Heating appliance” and “Water heater”.

The additions and revisions read as follows:

**§ 3280.702 Definitions.**

\* \* \* \* \*

Class 0 air ducts and air connectors means air ducts and air connectors having a fire hazard classification of zero when tested in accordance with UL 181-2003, Factory-Made Air Ducts and Air Connectors (incorporated by reference, see § 3280.4).

Class 1 air ducts and air connectors means air ducts and air connectors having a flame spread rating of not over 25 without evidence of continued progressive combustion and a smoke developed rating of not over 50 when tested in accordance with UL 181-2003, Standard for Safety Factory-Made Air Ducts and Air Connectors (incorporated by reference, see § 3280.4).

\* \* \* \* \*



Combination space heating and water heating appliance means a listed unit that is designed to provide space heating and water heating from a single primary energy source.

\* \* \* \* \*

Direct-vent system means a system or method of construction where all air for combustion is derived directly from the outside atmosphere and all flue gases are discharged to the outside atmosphere.

Direct-vent system appliance means an appliance that is installed with a direct vent system.

\* \* \* \* \*

Heating appliance means an appliance for comfort heating, domestic water heating, or a combination of comfort heating and domestic water heating.

\* \* \* \* \*

Water heater means an appliance for heating water for domestic purposes.

**27.** In § 3280.703:

a. Under the undesignated heading "Appliances," add a reference standard for "Decorative Gas Appliances for Installation in Solid Fuel Burning Appliances" after the standard for "Gas-Fired Central Furnace";

b. Under the undesignated heading "Nonferrous Pipe, Tubing, and Fittings," revise the reference standard for "Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service"; and

c. Under the undesignated heading "Miscellaneous," revise the reference standards for "Factory-Made Air Ducts and Connectors," "Relief Valves and Automatic Gas Shutoff Devices

for Hot Water Supply System,” “Gas Appliance Thermostats,” and “Standard for the Installation of Oil-Burning Equipment.”

The revisions and additions to read as follows:

**§ 3280.703 Minimum standards.**

\* \* \* \* \*

Appliances

\* \* \* \* \*

Decorative Gas Appliances for Installation in Solid Fuel Burning Fireplaces—RADCO DS-010-91 (incorporated by reference, see § 3280.4).

\* \* \* \* \*

Nonferrous Pipe, Tubing, and Fittings

\* \* \* \* \*

Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service—ASTM B280-95a.

\* \* \* \* \*

Miscellaneous

Factory-Made Air Ducts and Air Connectors, UL 181, Ninth Edition, April 4, 1996, with revisions through May 15, 2003 (incorporated by reference, see § 3280.4).

\* \* \* \* \*

Relief Valves for Hot Water Supply Systems, ANSI Z21.22-1999, (incorporated by reference, see § 3280.4).

\* \* \* \* \*

Gas Appliance Thermostats – ANSI Z21.23-93 (incorporated by reference, see § 3280.4).

\* \* \* \* \*

Standard for the Installation of Oil-Burning Equipment, NFPA 31-01 (incorporated by reference, see § 3280.4).

\* \* \* \* \*

#### **§ 3280.704 [Removed and Reserved]**

**28.** Remove and reserve § 3280.704.

**29.** Amend § 3280.705 as follows:

- a. Add paragraph (b)(5);
- b. Add Table to paragraph (d);
- c. Revise paragraph (f)(1);
- d. Revise paragraph (h); and
- e. Remove the Table designated “Part I” and the reference to “Part II [Reserved]”.

The additions and revisions read as follows:

#### **§ 3280.705 Gas piping systems.**

\* \* \* \* \*

(b) \* \* \*

(5) Corrugated stainless steel tubing (CSST) systems must be listed and installed in accordance with ANSI/IAS LC-1-1997, Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing (CSST) (incorporated by reference, see § 3280.4), and the requirements of this section.

\* \* \* \* \*

(d) \* \* \*

Table to paragraph (d)

**Maximum Capacity of Different Sizes of Pipe and Tubing in Thousands of Btu/hr of Natural Gas for Gas Pressures of 0.5 psig or Less, and a Maximum Pressure Drop of ½ in. Water Column**

Iron Pipe Sizes — Length											
ID	10 ft	20 ft	30 ft	40 ft	50 ft	60 ft	70 ft	80 ft	90 ft	100 ft	
¼ in.	43	29	24	20	18	16	15	14	13	12	
⅜ in.	95	65	52	45	40	36	33	31	29	27	
½ in.	175	120	97	82	73	66	61	57	53	50	
¾ in.	360	250	200	170	151	138	125	118	110	103	
1 in.	680	465	375	320	285	260	240	220	215	195	
Corrugated Stainless Steel Tubing — Length <sup>1</sup>											
EHD <sup>2</sup>	ID	10 ft	20 ft	30 ft	40 ft	50 ft	60 ft	70 ft	80 ft	90 ft	100 ft
13	⅜ in.	31	21	17	14	13	12	11	10	10	9
15	⅜ in.	42	30	24	20	18	16	15	14	13	12
18	½ in.	79	56	45	39	36	33	30	28	27	25
19	½ in.	91	64	52	45	40	36	35	32	31	29
23	¾ in.	155	111	92	80	72	65	60	58	55	52
25	¾ in.	184	132	108	93	84	77	71	66	62	60
30	1 in.	317	222	180	156	138	126	116	108	103	97
31	1 in.	368	258	209	180	161	147	135	127	120	113
37	1¼ in.	598	426	350	304	273	250	231	217	205	195
Copper Tubing — Length											
OD	10 ft	20 ft	30 ft	40 ft	50 ft	60 ft	70 ft	80 ft	90 ft	100 ft	
¼ in.	27	18	15	13	11	10	9	9	8	8	
⅜ in.	56	38	31	26	23	21	19	18	17	16	
½ in.	113	78	62	53	47	43	39	37	34	33	
¾ in.	197	136	109	93	83	75	69	64	60	57	
1 in.	280	193	155	132	117	106	98	91	85	81	

<sup>1</sup>Includes losses for four 90-degree bends and two end fittings. Tubing runs with larger numbers of bend and/or fittings shall be increased by an equivalent length of tubing according to the following equation:  $L = 1.3n$ , where  $L$  is actual length (ft) of tubing and  $n$  is the number of additional fittings and/or bends.

<sup>2</sup> EHD (Equivalent Hydraulic Diameter)-A measure of the hydraulic efficiency between different tubing sizes.

\* \* \* \*

(f) \* \*

(1) Tubing joints shall be made with either a single or a double flare of 45 degrees in accordance with Flares For Tubing, SAE-J533b-1992 or with other listed vibration-resistant fittings, or joints may be brazed with material having a melting point exceeding 1,000 °F. Metallic ball sleeve compression-type tubing fittings shall not be used.

\* \* \* \* \*

(h) Concealed tubing. (1) Copper tubing must not be run inside walls, floors, partitions, or roofs. Corrugated stainless steel tubing (CSST) may be run inside walls, floors, partitions, and roofs under the following conditions:

(i) The CSST is protected from accidental puncture by a steel strike barrier not less than 0.058 inch thick, or the barrier's equivalent, installed between the tubing and the finished wall and extending 4 inches beyond concealed penetrations of plates, firestops, and wall studs, or specified by the tubing manufacturer's instructions; and

(ii) The CSST is installed in single runs and is not rigidly secured.

(2) Where tubing passes through exterior walls, floors, partitions, or similar construction, the tubing must be protected by the use of weather-resistant grommets that snugly fit both the tubing and the hole through which the tubing passes, or protected as specified in the tubing manufacturer's instructions.

(3) Concealed joints: Piping or tubing joints must not be located in any wall, floor, partition, or similar concealed construction space.

\* \* \* \* \*

30. In § 3280.706, revise paragraph (j) to read as follows:

**§ 3280.706 Oil piping systems.**

\* \* \* \* \*

(j) Testing Tag. A tag must be affixed to each oil-fired appliance stating: "Before setting the system in operation, tank installations and piping must be checked for oil leaks with fuel oil of the same grade that will be burned in the appliance. No other material may be used for testing

fuel oil tanks and piping. Tanks must be filled to maximum capacity for the final check for oil leakage.”

31. In § 3280.707, revise paragraph (a)(2), add paragraph (d) introductory text, and revise paragraphs (d)(2) and (f) introductory text to read as follows:

**§ 3280.707 Heat producing appliances.**

(a) \* \* \*

(2) Each gas and oil burning comfort heating appliance must have an Annual Fuel Utilization Efficiency of not less than that specified in 10 CFR part 430, Energy Conservation Program for Consumer Products: Test Procedures for Furnaces/Boilers, Vented Home Heating Equipment and Pool Heaters.

\* \* \* \* \*

(d) Performance efficiency. Each automatic storage water heater must comply with the efficiency requirements of 10 CFR part 430, Energy Conservation Program for Consumer Products: Energy Conservation Standards for Water Heaters.

\* \* \* \* \*

(2) All gas and oil-fired automatic storage water heaters shall have a recovery efficiency, E, and a standby loss, S, as described below. The method of test of E and S shall be as described in section 2.7 of Gas Water heaters, Vol. I, Storage Water Heaters with Input/Ratings of 75,000 BTU per hour or less, ANSI Z21.10.1–1998 with addendums Z21.10.1a– 2000, and Z21.10.1b– 1992, except that for oil-fired units. CF=1.0, Q=total gallons of oil consumed and H=total heating value of oil in BTU/gallon.

Storage capacity in	Recovery efficiency	Standby loss
------------------------	------------------------	--------------

gallons		
Less than 25	At least 75 percent.	Not more than 7.5 percent.
25 up to 35 ..	00 .....	Not more than 7 percent.
35 or more ...	00 .....	Not more than 6 percent.

\* \* \* \*

(f) Oil-fired heating equipment. All oil-fired heating equipment must conform to Liquid Fuel-burning Heating Appliances for Manufactured Homes and Recreational Vehicles, UL 307A—1995, with 1997 revisions, and be installed in accordance with Standard for the Installation of Oil Burning Equipment, NFPA 31-01 (incorporated by reference, see § 3280.4). Regardless of the requirements of the above-referenced standards, or any other standards referenced in this part, the following are not required:

\* \* \* \*

**32.** Revise § 3280.711 to read as follows:

**§ 3280.711 Instructions.**

Operating instructions must be provided with each appliance. The operating and installation instructions for each appliance must be provided with the homeowner's manual.

**33.** Amend § 3280.714 as follows:

- a. Add “(incorporated by reference, see § 3280.4)” immediately following “Heat Pump Equipment” in paragraph (a)(1) introductory text and immediately following “Heat Pump Appliances” in paragraph (a)(2); and
- b. Revise paragraphs (a)(1)(i) and (ii).

The revisions read as follows:

**§ 3280.714 Appliances, cooling.**

(a) \* \* \*

(1) \* \* \*

(i) Electric motor-driven unitary air-cooled air conditioners and heat pumps in the cooling mode with rated capacity less than 65,000 BTU/hour (19,045 watts), when rated at ARI standard rating conditions in ARI Standard 210/240-89, Unitary Air-Conditioning and Air-Source Heat Pump Equipment, must have seasonal energy efficiency (SEER) values not less than as specified in 10 CFR Part 430, Energy Conservation Program for Consumer Products: Central Air Conditioners and Heat Pumps Energy Conservation Standards.

(ii) Heat pumps must be certified to comply with all requirements of the ARI Standard 210/240-89, Unitary Air Conditioning and Air-Source Heat Pump Equipment. Electric motor-driven vapor compression heat pumps with supplemental electrical resistance heat must be sized to provide by compression at least 60 percent of the calculated annual heating requirements for the manufactured home being served. A control must be provided and set to prevent operation of supplemental electrical resistance heat at outdoor temperatures above 40°F (4°C), except for defrost conditions. Electric motor-driven vapor compression heat pumps with supplemental electric resistance heat conforming to ARI Standard 210/240-89, Unitary Air-Conditioning and Air-Source Heat Pump Equipment, must have Heating Season Performance Factor (HSPF) efficiencies not less than as specified in the 10 CFR Part 430, Energy Conservation Program for Consumer Products: Central Air Conditioners and Heat Pumps Energy Conservation Standards.

\* \* \* \* \*

**34.** In § 3280.715, revise paragraphs (a)(1) introductory text, (a)(5)(ii), (a)(7), and (d) to read as follows:

**§ 3280.715 Circulating air systems.**

(a) \* \* \*



(1) Supply air ducts, fittings, and any dampers contained therein must be made of galvanized steel, tin-plated steel, or aluminum, or must be listed as Class 0 or Class 1 air ducts and air connectors in accordance with UL 181-2003, Factory-Made Air Ducts and Air Connectors (incorporated by reference, see § 3280.4). Class 1 air ducts and air connectors must be located at least 3 feet from the furnace bonnet or plenum. Air connectors must not be used for exterior manufactured home duct connection. A duct system integral with the structure must be of durable construction that can be demonstrated to be equally resistant to fire and deterioration as required by this section. Furnace supply plenums must be constructed of metal that extends a minimum of 3 feet from the heat exchanger measured along the centerline of airflow. Ducts constructed from sheet metal must be in accordance with the following table:

\* \* \* \* \*

(5) \* \* \*

(ii) The manufacturer must provide installation instructions for supporting, mechanically fastening, sealing, and insulating each crossover duct. The instructions must indicate that no portion of the crossover duct is to be in contact with the ground, and must describe the means to support the duct without compressing the insulation and restricting airflow.

\* \* \* \* \*

(7) Unless installed in a basement, supply and return ducts, fittings, and crossover duct plenums exposed directly to outside air, such as those under-chassis crossover ducts or ducts connecting external heating, cooling, or combination heating/cooling appliances, must be insulated with material having a minimum thermal resistance of R-8 in all Thermal Zones. All such insulating materials must have a continuous vapor barrier retarder having a perm rating of

not more than 1 perm. Where ducts are exposed underneath the manufactured home, they must comply with paragraph (a)(5)(ii) of this section, and shall be listed for exterior use.

\* \* \* \* \*

(d) Supports and protection. Ducts must be securely supported. Nails or other fasteners must not be driven or penetrate through duct walls. Where vertical ducts are installed within closets or rooms, they must be enclosed with materials equivalent to those used in the closet or room construction.

\* \* \* \* \*

36. In § 3280.802, revise paragraphs (a)(37) and (39) to read as follows:

**§ 3280.802 Definitions.**

(a) \* \* \*

(37) *Receptacle* means a contact device installed at the outlet for the connection of an attachment plug. A single receptacle is a single contact device with no other contact device on the same yoke. A multiple receptacle is a device with two or more contact devices on the same yoke.

\* \* \* \* \*

(39) *Utilization equipment* means equipment that utilizes electric energy for electronic, electromechanical, chemical, heating, lighting, or similar purposes.

\* \* \* \* \*

37. In § 3280.803, revise paragraphs (d), (f), (i), and (k)(2) and (3) to read as follows:

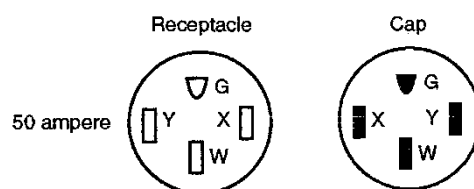
**§ 3280.803 Power supply.**

\* \* \* \* \*

(d) A suitable clamp or the equivalent must be provided at the distribution panelboard knockout to afford strain relief for the cord to prevent strain from being transmitted to the terminals when the power supply cord is handled in its intended manner.

\* \* \* \*

(f) The attachment plug cap must be a 3-pole, 4-wire, grounding type, rated 50 amperes, 125/250 volts, intended for use with the 50-ampere, 125/250-volt receptacle configuration, as shown below. The cap must be listed, by itself or as part of a power-supply cord assembly, for the purpose, and must be molded to or installed on the flexible cord so that it is secured tightly to the cord at the point where the cord enters the attachment plug cap. If a right-angle cap is used, the configuration must be so oriented that the grounding member is farthest from the cord.



Note: 50-ampere 125/250-volt receptacle and attachment plug cap configurations, 3-pole, 4-wire, grounding types used for manufactured home supply cords and manufactured home parks. Complete details of the 50-ampere cap and receptacle can be found *Wiring Device Dimensional Requirements* (ANSI/NEMA WD-6-1997).

Figure 1 to paragraph (f)

\* \* \* \*

(i) Where the cord passes through walls or floors, it must be protected by means of conduits and bushings or the equivalent. The cord is permitted to be installed within the manufactured home walls, provided that a continuous raceway having a maximum size of 1-1/4 inch is installed from the branch-circuit panelboard to the underside of the manufactured home floor.

\* \* \* \*

(k) \* \* \*

(2) A listed metal raceway or listed rigid nonmetallic conduit from the disconnecting means in the manufactured home to the underside of the manufactured home, with provisions for the attachment of a suitable junction box or fitting to the raceway on the underside of the manufactured home. The manufacturer must provide written installation instructions stating the proper feeder conductor sizes for the raceway and the size of the junction box to be used; or

(3) Service equipment installed in or on the manufactured home, provided that all of the following conditions are met:

(i) In its written installation instructions, the manufacturer must include information indicating that the home must be secured in place by an anchoring system or installed on and secured to a permanent foundation;

(ii) The installation of the service equipment complies with Article 230 of the National Electrical Code, NFPA 70-2005 (incorporated by reference, see § 3280.4). Exterior service equipment or the enclosure in which it is to be installed must be weatherproof, and conductors must be suitable for use in wet locations;

(iii) Means are provided for the connection of the grounding electrode conductor to the service equipment and routing it to the conductor outside the structure;

(iv) Bonding and grounding of the service must be in accordance with Article 250, NFPA 70-2005, National Electrical Code (incorporated by reference, see § 3280.4);

(v) The manufacturer must include in its installation instructions one method of grounding the service equipment at the installation site. The instructions must clearly state that other methods of grounding are found in Article 250 of NFPA 70-2005, National Electrical Code;

(vi) The minimum size grounding electrode conductor must be specified in the instructions; and

(vi) A red warning label must be mounted on or adjacent to the service equipment. The label must state the following: WARNING – DO NOT PROVIDE ELECTRICAL POWER UNTIL THE GROUNDING ELECTRODE(S) IS INSTALLED AND CONNECTED (SEE INSTALLATION INSTRUCTIONS).

38. In § 3280.804, revise paragraphs (a), (c), (e), and (f) to read as follows:

**§ 3280.804 Disconnecting means and branch-circuit protective equipment.**

(a) The branch-circuit equipment is permitted to be combined with the disconnecting means as a single assembly. Such a combination is permitted to be designated as a distribution panelboard. If a fused distribution panelboard is used, the maximum fuse size for the mains shall be plainly marked, with the lettering at least 1/4-inch high and visible when fuses are changed. See Article 110-22 of NFPA 70-2005, National Electrical Code (incorporated by reference, see § 3280.4), concerning the identification of each disconnecting means and each service, feeder, or branch circuit at the point where it originated, and the type of marking needed.

\* \* \* \* \*

(c) Disconnecting means. A single disconnecting means must be provided in each manufactured home, consisting of a circuit breaker, or a switch and fuses and its accessories, installed in a readily accessible location near the point of entrance of the supply cord or conductors into the manufactured home. The main circuit breakers or fuses must be plainly marked “Main.” This equipment must contain a solderless type of grounding connector or bar for the purposes of grounding, with sufficient terminals for all grounding conductors. The

neutral bar termination of the grounded circuit conductors must be insulated in accordance with § 3280.809(b).

\* \* \* \*

(e) A distribution panelboard employing a main circuit breaker must be rated not less than 50 amperes and employ a 2-pole circuit breaker rated 40 amperes for a 40-ampere supply cord, or 50 amperes for a 50-ampere supply cord. A distribution panelboard employing a disconnect switch and fuses must be rated not less than 60 amperes and must employ a single, 2-pole fuseholder rated not less than 60-amperes with 40- or 50-ampere main fuses for 40- or 50-ampere supply cords, respectively. The outside of the distribution panelboard must be plainly marked with the fuse size.

(f) The distribution panelboard must be located in an accessible location, and must not be located in a bathroom or a clothes closet. A clear working space at least 30 inches wide and 30 inches in front of the distribution panelboard must be provided. This space must extend from the floor to the top of the distribution panelboard. Where used as switches, circuit breakers must be installed so that the center of the grip of the operating handle of the circuit breaker, when in its highest position, will not be more than 6 feet, 7 inches above the floor.

\* \* \* \*

**39.** In § 3280.805, add a sentence at the end of paragraph (a)(1), revise paragraphs (a)(2) and (a)(3)(i), and add paragraph (a)(3)(vi) to read as follows:

**§ 3280.805 Branch circuits required.**

(a) \* \* \*

(1) \* \* \* Lighting circuits are permitted to serve built-in gas ovens with electric service for lights, clocks, or timers, or for listed cord-connected garbage disposal units.

(2) Small Appliances. For the small appliance load in kitchens, pantries, dining rooms, and breakfast rooms of manufactured homes, two or more 20-ampere appliance branch circuits, in addition to the branch circuit specified in paragraph (a)(1) of this section, must be provided for all receptacle outlets in these rooms, and such circuits must have no other outlets. Countertop receptacle outlets installed in the kitchen must be supplied by not less than two small appliance branch circuits. One or more of the small appliance branch circuits may also supply other receptacle outlets in the kitchen, pantry, dining room, and breakfast room. Receptacles installed solely for the electrical supply to an electric clock and receptacles installed to provide power for supplemental equipment and lighting on gas-fired ranges, ovens, or counter-mounted cooking units are not subject to the requirements of this paragraph (a)(2).

(3) \* \* \*

(i) The ampere rating of fixed appliances must not exceed 50 percent of the circuit rating if lighting outlets are on the same circuit (receptacles in the kitchen, dining area, and laundry are not considered to be lighting outlets);

\* \* \* \* \*

(vi) Bathroom receptacle outlets must be supplied by at least one 20-ampere branch circuit. Such circuits must have no other outlets, except that it is permissible to place the receptacle outlet for a heat tape or pipe heating cable required by § 3280.806(d)(10) on a bathroom circuit. (See § 3280.806(b).)

\* \* \* \* \*

**40.** In § 3280.806, revise paragraphs (b) and (d) introductory text, redesignate paragraph (d)(10) as paragraph (d)(11), add new paragraph (d)(10) and paragraph (g) to read as follows:

**§ 3280.806 Receptacle outlets.**

\* \* \* \* \*

(b) All 125-volt, single-phase, 15- and 20-ampere receptacle outlets installed outdoors, or in compartments accessible from outside the manufactured home, and in bathrooms, including receptacles in light fixtures, must have ground-fault circuit-interrupter protection for personnel. Ground-fault circuit-interrupter protection for personnel must be provided for receptacles serving countertops in kitchens and receptacle outlets located within 6 feet of a wet bar sink, except for receptacles installed for appliances in dedicated spaces, such as dishwashers, disposals, refrigerators, freezers, and laundry equipment.

\* \* \* \* \*

(d) Receptacle outlets required. Except in the bath, closet, and hall areas, receptacle outlets must be installed at wall spaces 2 feet or more wide, so that no point along the floor line is more than 6 feet, measured horizontally, from an outlet in that space. Receptacle outlets in floors shall not be counted as part of the required number of receptacle outlets, unless located within 18 inches of the wall. In addition, a receptacle outlet must be installed in the following locations:

\* \* \* \* \*

(10) On the underside of the home for the connection of pipe heating cable(s) or heat tape(s), and the outlet must:

- (i) Be located within 2 feet of the cold water inlet;
- (ii) Be connected to an interior branch circuit, other than a small appliance branch circuit;
- (iii) Be located on a circuit where all of the outlets are on the load side of the ground-fault circuit-interrupter protection for personnel; and



(iv) Not be considered as the receptacle outlet required by paragraph (8) of this section.

\* \* \* \* \*

(g) Receptacles must not be in a face-up position in any countertop.

**41.** In § 3280.807, revise paragraph (c) to read as follows:

**§ 3280.807 Fixtures and appliances.**

\* \* \* \* \*

(c) Where a lighting fixture is installed over a bathtub or in a shower stall, it must be listed for wet locations. [See also Article 410.4(D) of the National Electrical Code NFPA No. 70-2005.]

\* \* \* \* \*

**42.** In § 3280.808,

- a. Revise paragraphs (f), (h), (i) introductory text, (i)(1), and (k);
- b. Remove paragraph (l);
- c. Redesignate paragraphs (m) through (r) as paragraphs (l) through (q); and
- d. Revise newly redesignated paragraph (o)(2),

The revisions read as follows:

**§ 3280.808 Wiring methods and materials.**

\* \* \* \* \*

(f) Where metal faceplates are used, they must be effectively grounded.

\* \* \* \* \*

(h) Where rigid metal conduit or intermediate metal conduit is terminated at an enclosure with a locknut and bushing connection, two locknuts must be provided, one inside and one outside of the enclosure. Rigid nonmetallic conduit or electrical nonmetallic tubing is permitted. All cut ends of conduit and tubing must be reamed or otherwise finished to remove rough edges.

(i) Switches must be rated as follows:

(1) For lighting circuits, switches must be rated not less than 10 amperes, 120 to 125 volts, and in no case less than the connected load.

\* \* \*

(k) When outdoor or under-chassis line-voltage (120 volts, nominal or higher) wiring is exposed to moisture or physical damage, it must be protected by rigid metal conduit or intermediate metal conduit. The conductors must be suitable for wet locations. Electrical metallic tubing or rigid nonmetallic conduit is permitted to be used when closely routed against frames and equipment enclosures.

\* \* \* \* \*

(o) \* \* \*

(2) Conductors having an insulation suitable for the temperature encountered may be run from the appliance terminal connections to a readily accessible outlet box placed at least one foot from the appliance. If provided, these conductors must be in a suitable raceway or Type AC or MC cable, of at least 18 inches but not more than 6 feet in length.

\* \* \* \* \*

43. In § 3280.813, revise paragraph (b) to read as follows:

**§ 3280.813 Outdoor outlets, fixtures, air-conditioning equipment, etc.**

\* \* \* \* \*

(b) A manufactured home provided with a branch circuit designed to energize outside heating equipment or air-conditioning equipment, other than room air conditioners, or both, located outside the manufactured home, other than room air conditioners, must have such branch-circuit conductors terminate in a listed outlet box, or disconnecting means, located on the outside of the manufactured home.

(1) A label must be permanently affixed adjacent to the outlet box. The label must be not less than 0.020-inches thick etched brass, stainless steel, anodized or alclad aluminum, or equivalent, and must not be less than 3 inches x 1-3/4 inches in size.

(2)(i) The label must include the correct voltage and ampere rating and the following information:

THIS CONNECTION IS FOR HEATING AND/OR AIR-CONDITIONING EQUIPMENT. THE BRANCH CIRCUIT IS RATED AT NOT MORE THAN \_\_\_\_ AMPERES, AT \_\_\_\_ VOLTS, 60-HERTZ, \_\_\_\_ CONDUCTOR AMPACITY. A DISCONNECTING MEANS IS LOCATED WITHIN SIGHT OF THE EQUIPMENT.

(ii) The correct voltage and ampere rating shall be given. The tag must be not less than 0.020-inches thick etched brass, stainless steel, anodized or alclad aluminum, or equivalent. The tag must have a minimum size of not less than 3 inches x 1-3/4 inches.

**44.** In § 3280.815, revise paragraph (a) as follows:

**§ 3280.815 Polarization.**

(a)(1) Except as provided in paragraph (a)(2) of this section, the white conductor must be employed for the grounded (neutral) circuit conductors only and must be connected to the white terminal or lead on receptacle outlets and fixtures. The grounded conductor must be the unswitched wire in switched circuits.

(2) A cable containing an insulated conductor with a white or natural gray outer finish or a marking of three continuous white stripes may be used for single-pole, three-way, or four-way switch loops, where this conductor is used for the supply to the switch, but not as a return conductor from the switch to the switched outlet. In these applications, the conductor with white or natural gray insulation or with three continuous white stripes must be permanently re-identified to indicate its use by painting or other effective means at its terminations and at each location where the conductor is visible and accessible.

\* \* \* \* \*

Date: November 22, 2013

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Carol Galante  
Acting Assistant Secretary for Housing—  
Federal Housing Commissioner

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